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1. PURPOSE

THE FUNCTION TEST IS DESIGNED (1) TO TEST FOR PROPER OPERATION OF THE PAPER-TAPE STATUS INDICATORS AND (2) TO TEST FOR ACCURATE DATA HANDLING BY THE PAPER-TAPE READER AND PAPER-TAPE PUNCH WHEN OVERLAPPED WITH OTHER ELEMENTS OF THE 1800 SYSTEM. THIS TAPE MAY ALSO BE USED TO REPRODUCE TAPES.

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

THIS PROGRAM MUST RUN UNDER CONTROL OF THE DIAGNOSTIC MONITOR. THE DIAGNOSTIC MONITOR PROGRAM USES 2,047 STORAGE WORDS, AND THIS PROGRAM USES 741 STORAGE WORDS.

2.2 EQUIPMENT PREREQUISITES

A PAPER-TAPE READER AND/OR PAPER-TAPE PUNCH.

3. USE PROCEDURE

3.1 PROGRAM LOADING

STANDARD LOADING PROCEDURE AS DESCRIBED IN THE DIAGNOSTIC MONITOR USE PROCEDURE.

3.2 PROGRAM OPERATION

STANDARD MONITOR OPERATING PROCEDURES APPLY.
THESE PROCEDURES ARE SUMMARIZED HERE. SEE DM USE PROCEDURE FOR DETAILS.

1. CLEAR STORAGE
2. LOAD DIAGNOSTIC MONITOR
3. SELECT MODE OF EXECUTION
4. SELECT MONITOR CONTROL OPTIONS, IF DESIRED
5. SELECT PROGRAM OPTIONS, IF NEEDED,

   TABLE 0 PROGRAM CONTROL FUNCTION
   TABLE 1 ROUTINE SELECT FUNCTION
   TABLE 3 DATA ENTRY FUNCTION

6. INSTRUCT MONITOR TO EXECUTE

TABLE 0 CONTROL FUNCTION

SENSE/PROGRAM 0 1 2 3 4 5 6 7	
0 0 0 0 0 1 0 0	1. SET FUNCTION 00 IN SENSE/PROGRAM SWITCHES 0 AND 1. 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. 3. SET DESIRED CONTROL OPTIONS IN DATA ENTRY SWITCHES 0-15. 4. PRESS CONSOLE INTERRUPT.

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
1	REALIGN PAPER TAPE IN READER
1	MANUAL TAPE ALIGNMENT IN READER

TABLE 1 ROUTINE SELECT FUNCTION

SENSE/PROGRAM 0 1 2 3 4 5 6 7	
0 1 0 0 0 1 0 0	1. SET FUNCTION 01 IN SENSE/PROGRAM SWITCHES 0 AND 1. 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. 3. SET DESIRED ROUTINE NUMBER IN DATA ENTRY SWITCHES 0-15. 4. PRESS CONSOLE INTERRUPT.

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
0 0 1	ROUTINE 1 PUNCH
0 1 0	ROUTINE 2. READ
0 1 1	ROUTINE 3. READ-PUNCH-COMPARE
1 0 0	ROUTINE 4. REPRODUCE PAPER TAPE
1 0 1	ROUTINE 5. PUNCH DATA (TABLE 3)
0 0 0	EXIT FROM RTN 4 OR 5 AND RESTART

TABLE 3 DATA ENTRY FUNCTION

SENSE/PROGRAM 0 1 2 3 4 5 6 7	
1 1 0 0 0 1 0 0	1. SET FUNCTION 11 IN SENSE/PROGRAM SWITCHES 0 AND 1. 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. 3. SET DESIRED PUNCH DATA IN DATA ENTRY SWITCHES 0-15. 4. PRESS CONSOLE INTERRUPT. NOTE -- EACH HALF WORD INCLUDES TAPE CHANNELS 8-1 RESPECTIVELY.

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
X X X X X X X X	ONE DATA WORD TO BE PUNCHED
X X X X X X X X	ALTERNATE DATA WORD TO BE PUNCHED

3.3 PROGRAM HALTS

THIS PROGRAM HAS NO HALTS.

3.4 PROGRAM TERMINATION

A. STANDARD MONITOR TERMINATION

B. PROGRAM CONTROL FUNCTION

TEST 4 AND 5 ARE NOT NORMALLY RUN IN SEQUENCE WITH TESTS AND, THEREFORE, WILL NOT TERMINATE. THE PROGRAM WILL NORMALLY TERMINATE AFTER ROUTINE 3 HAS BEEN EXECUTED.

4. PRINTOUTS

4.1 STATUS MESSAGES

PID MID RID RAD MODIFIER'S

0400 A001 000X AFED

THE PAPER TAPE TEST RECORD IS ASSUMED TO BE PROPERLY ALIGNED IN THE READER AT THIS TIME. THIS MESSAGE IS RECEIVED ONLY AFTER OPERATOR SPECIFICATION OF REALIGN TAPE OPTION.

4.2 ERROR PRINTOUTS

PID MID RID RAD WAS S/B
0400 E001 000X XXXX XXXX 0X00

DSW ERROR AFTER READER-CONTROL COMMAND

0400 E002 000X XXXX XXXX 0X00

DSW ERROR AFTER PUNCH COMMAND

0400 E003 000X XXXX XXXX 0F00

DSW ERROR AFTER READER-CONTROL AND PUNCH COMMANDS

0400 E004 000X XXXX XXXX CX00

DSW ERROR WHEN CHECKING FOR READER-READY

0400 E005 000X XXXX XXXX 0X00

DSW ERROR WHEN CHECKING FOR PUNCH-READY

0400 E006 000X XXXX XXXX 4000

READER SERVICE-REQUEST DSW ERROR

0400 E007 000X XXXX XXXX 1000

PUNCH SERVICE-REQUEST DSW ERROR

0400 E008 000X XXXX XXXX 5000

DSW ERROR WHEN PUNCH AND READER INTERRUPTS RECEIVED AT SAME TIME

0400 E009 000X XXXX XXXX X000

DSW ERROR WHEN FIRST INTERRUPT WAS RECEIVED. AT THIS TIME BOTH THE READER AND THE PUNCH ARE BEING RUN UNDER RACE CONDITIONS. THE DSW FOR THE DEVICE THAT INTERRUPTS FIRST IS ANALIZED FIRST. ANY ERROR WILL BE PRINTED AS AN E009. SIMILARLY FOR THE SECOND INTERRUPT, ANY ERROR WILL BE PRINTED AS E010.

0400 E010 000X XXXX XXXX X000

DSW ERROR WHEN FIRST INTERRUPT WAS RECEIVED. AT THIS TIME BOTH THE READER AND THE PUNCH ARE BEING RUN UNDER RACE CONDITIONS. THE DSW FOR THE DEVICE THAT INTERRUPTS FIRST IS ANALIZED FIRST. ANY ERROR WILL BE PRINTED AS AN E009. SIMILARLY FOR THE SECOND INTERRUPT, ANY ERROR WILL BE PRINTED AS E010.

0400 E011 000X XXXX XXXX 0X00

NO READER INTERRUPT RECEIVED. (LAST DSW SENSED IMMEDIATELY AFTER READER-CONTROL COMMAND)

0400 E012 000X XXXX XXXX 0X00

NO PUNCH INTERRUPT RECEIVED (LAST DSW SENSED IMMEDIATELY AFTER READER-CONTROL COMMAND)

0400 E013 000X XXXX XXXX 0F00

NO PUNCH OR READER INTERRUPT (LAST DSW SENSED IMMEDIATELY AFTER READER-CONTROL AND PUNC COMMANDS)

0400 E014 000X XXXX XX00 XX00 B0B0

READ/COMPARE ERROR (RDR BUFFER CHANGED)
DATA (XX00) PRINTED AS ENTERED IN CORE - CHANNELS 8-1 RESPECTIVELY

0400 E015 000X XXXX XX00 XX00 B0B0

READ/COMPARE ERROR (RDR BUFFER UNCHANGED)
DATA (XX00) PRINTED AS ENTERED IN CORE - CHANNELS 8-1 RESPECTIVELY

0400 E016 0004 XXXX XXXX 0000 XX00

READER-DSW READ ERROR WHEN REPRODUCING TAPES. IF TAPE STOPPED, THE FIRST CHARACTER BEYOND THE READ STATION WAS PERHAPS IMPROPERLY READ. THIS CHARACTER HAS NOT AS YET BEEN PUNCHED. BACK THE READER UP ONE CHARACTER AND PRESS START ON THE P-C.
DATA (XX00) PRINTED AS ENTERED IN CORE - CHANNELS 8-0 RESPECTIVELY.

0400 E017 000X XXXX XXXX 0X40

WRITE STORAGE PROTECT SWITCH IS ON.
A READER STORAGE PROTECT ERROR SHOULD HAVE BEEN FORCED. CHECK IF

FIRST SECOND
READ READ
0400 E018 000X XXXX XX00 XX00

CONSECUTIVE READ ERROR DATA (XX00) SHOULD AGREE.

0400 E019 000X XXXX XX00 YY00

THE PROGRAM COULD NOT ALIGN THE TAPE IN THE READER IN THE LAST 500 CHARACTERS.

THE PROBLEM IS,

A. OPEN DATA CHANNEL(S). XX00 SHOULD BE FF0O, WHICH IS THE CHARACTER THAT WOULD BE PLACED IN CORE BY READING AN ALL-BITS CHARACTER. ANY MISSING BIT(S) INDICATE THE OPEN DATA CHANNEL(S).

B. SHORTED DATA CHANNEL(S). YY00 SHOULD BE 0000, WHICH IS THE CHARACTER THAT WOULD BE PLACED IN CORE BY READING A NO-BITS CHARACTER. ANY BIT(S) PRESENT INDICATE THE SHORTED CHANNEL(S).

C. IF BOTH XX00 AND YY00 ARE CORRECT,

1. THE TAPE IS NOT IN THE READER CORRECTLY, OR
2. THE READER CANNOT READ THE FIRST 8 CHARACTERS PROPERLY. IF SO, TRY ONE OF THESE,

A. TRY RUNNING THE REPRODUCE TAPE ROUTINE (ROUTINE 4).
B. TRY MANUALLY ALIGNING THE TAPE IN THE READER. THEN SPECIFY THE MANUAL TAPE ALIGNMENT OPTION (TABLE 0) AND RESTART THE PROGRAM.

5. COMMENTS

THE FUNCTION TEST CONSISTS OF THREE NORMAL ROUTINES AND TWO OPTIONAL ROUTINES. NORMALLY, ROUTINES ONE THROUGH THREE ARE RUN IN ORDER. ALL ROUTINES ARE DESCRIBED IN PARAGRAPHS 5.1 THROUGH 5.5.

THE FUNCTION TEST,

A. CHECKS DSW FOR PROPER BITS BEFORE ISSUING WRITE (PUNCH) OR CONTROL (READER) COMMANDS.

B. CHECKS DSW FOR CORRECTNESS AFTER XIO INSTRUCTION.

C. CHECKS FOR INTERRUPT FROM DEVICE WITHIN SPECIFIED TIME LIMIT.

D. CHECKS DSW AFTER INTERRUPT IS RECEIVED.

5.1 ROUTINE NO. 1 (PUNCH TEST)

TEST NO. 1 CHECKS THE OPERATION OF THE PAPER-TAPE PUNCH WHILE PUNCHING TWO TEST RECORDS. THE RECORD INCLUDES A RIPPLE PATTERN AND AN ALL-CHARACTER PATTERN. (REFER FIGURE 1).

5.2 ROUTINE NO. 2 (READER TEST)

THIS TEST CHECKS THE OPERATION OF THE PAPER TAPE READER WHILE READING ONE RECORD PRODUCED BY THE PUNCH TEST. THE TAPE IS NORMALLY AUTOMATICALLY ALIGNED IN THE READER BY READING EIGHT CONSECUTIVE CHARACTERS CORRECTLY. A MESSAGE IS PRINTED WHEN THE TAPE IS PROPERLY ALIGNED. IF DESIRED, THE OPERATOR CAN MANUALLY PLACE THE TAPE IN THE READER ON THE FIRST CHARACTER OF THE RIPPLE PATTERN AND SPECIFY THE MANUAL ALIGNMENT OPTION AS IN TABLE 0. THE TAPE MAY ALSO BE REALIGNED IN THE READER AT ANY TIME.

EACH CHARACTER READ IS COMPARED WITH A WORD IN STORAGE. AN UNEQUAL COMPARE WILL CAUSE AN ERROR TYPEOUT. SEE 4.7. THERE WILL BE BE ONE ERROR TYPEOUT FOR EACH READ/COMPARE ERROR.

THESE ERROR PRINTOUTS MAY INDICATE THE TAPE IS NOT IN THE PROPER POSITION IN THE READER. THE TAPE MAY BE MANUALLY ADJUSTED IN THE READER OR THE OPERATOR MAY SELECT REALIGN TAPE. (TABLE 0)

5.3 ROUTINE NO. 3 (PUNCH/READ/COMPARE TEST)

THIS TEST CHECKS THE FUNCTION AND RELIABILITY OF THE PAPER TAPE READER AND PUNCH WHEN OPERATED TOGETHER. BOTH DEVICES ARE OPERATED AT THE SAME SPEED. THE DATA READ IS COMPARED WITH THE DATA PUNCHED IN A NEW TAPE. THIS TEST ALSO HAS THE TAPE ALIGNMENT FEATURE OF TEST NO. 2. THE TEST IS COMPLETE AFTER ONE RECORD HAS BEEN PROCESSED.

5.4 ROUTINE NO. 4 (REPRODUCE-TAPES TEST)

THE OPERATOR HAS THE OPTION OF REPRODUCING ANY TAPE. THE OPERATOR MUST SPECIFY HALT ON ERROR OPTION IN MONITOR CONTROL TABLE C. AGAIN, ALL DEVICE STATUS CHECKING DONE IN TESTS NOS. 1 AND 2 IS INCLUDED IN THIS TEST. ALSO, A DSW ERROR WHEN READING THE TAPE WILL CAUSE A DELAY OF THE PROGRAM UNTIL THE OPERATOR CAN INTERVENE TO VERIFY THAT DELAY OF THE PROGRAM UNTIL THE OPERATOR CAN INTERVENE. WHEN AN ERROR OTHER THAN E016 IS PRINTED PRESS START AND THEN VERIFY THAT THE PROPER PUNCHES ARE OBTAINED. SEE SPECIFIC ERROR MESSAGE FOR AID IN INSTRUCTIONS.

5.5 ROUTINE NO. 5 (PUNCH FCN 3 SWITCH SETTINGS)

THIS ROUTINE PUNCHES THE DATA ENTERED VIA FUNCTION LEVEL 3, ALTERNATELY THE FIRST HALF THEN THE SECOND HALF OF THE WORD. (TABLE 3)

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.

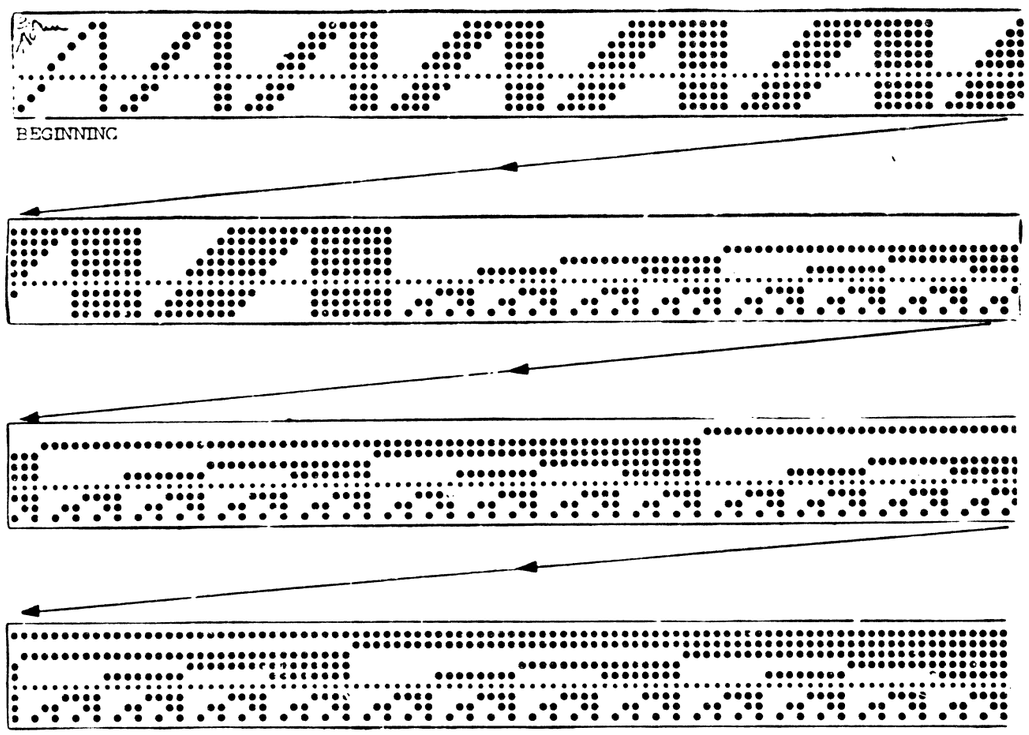
DDEF STANDS FOR DEVICE DEFINITION EDIT FIELD. IT INCLUDES:
1. THE INTERRUPT LEVEL ASSOCIATED WITH THIS DEVICE (USE HEX NOTATION, 00-17).
2. THE ILSW BIT POSITION ASSOCIATED WITH THIS DEVICE (USE HEX NOTATION, 0-F).
3. THE CHANNEL ASSIGNED TO THIS DEVICE (0-8). IF THIS IS A DPC DEVICE, PUNCH AN "F" IN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

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).

	PROGRAM ID					CARD SEQUENCE NUMBER				NUMBER OF EDIT ENTRIES				DDEF: INTERRUPT LEVEL (HEX)		DDEF: ILSW BIT (HEX)	DDEF: CHANNEL (OR F)																
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	0	4	0	0		E	D	0	C		0	0	0	1					F													
END	E	0	4	0	0		F	F	F	F																								

CARD 0 CONTAINS ONE ENTRY ONLY. THIS ENTRY IS THE DEVICE DEFINITION EDIT FIELD (DDEF) FOR THE PAPER TAPE READER/PUNCH TO BE TESTED.
CARD END IS THE "END EDIT CARD". PUNCH EXACTLY AS IS SHOWN.

DATE 28 FEB 66 01 MAY 66
EC 415120 415120A



SAMPLE 1055 OUTPUT

```
                *                                                       80400000
                *                  1800 DIAGNOSTIC MONITOR              80400010
                *                                                       80400020
                *                  TRANSFER VECTOR                      80400030
                *                                                       80400040
                *                                                       80400050
012C            BEGIN EQU   300                                         80400060
012D            START EQU   BEGIN+1                                     80400070
012E            END   EQU   START+1                                     80400080
012F            LOG   EQU   END+1                                       80400090
0130            ERROR EQU   LOG+1                                       80400100
0131            REQDV EQU   ERROR+1                                     80400110
0132            RELDV EQU   REQDV+1                                     80400120
0133            HALT  EQU   RELDV+1                                     80400130
                *                                                       80400140
                *                                                       80400150
0000                  ORG   *+2047                                      80400160
                ****************************************************    80400170
                *                  DIAGNOSTIC MONITOR              *    80400180
                *                     CONTROLLED                   *    80400190
                *                  1800 PAPER TAPE TEST            *    80400200
                ****************************************************    80400210
                *                                                       80400220
                *                  PROGRAM STATUS TABLE                 80400230
                *                                                       80400240
07FF 0  0400    PID   DC    /0400       PROGRAM I.D. NO                 80400250
0800 0  0000    PIC   DC    /0000       TEST NUMBER                     80400260
0801 C  0000    RAC   DC    /0000       TEST ADDRESS                    80400270
0802 0  0000    SWC   DC    /0000       FCN 0 - CONTROL                 80400280
0803 0  0000    SW1   DC    /0000       FCN 1 - INITIAL RTN             80400290
0804 0  0000    SW2   DC    /0000       FCN 2 - DEVICE ONLY             80400300
0805 C  0000    SW3   DC    /0000       PUNCH SWS WORD                  80400310
0806 1  086C          DC    PTILZ       INITIALIZATION ADDR             80400320
0807 1  086C          DC    PTILZ       LOOP PROGRAM ADDR               80400330
0808 1  0AD9    EPA   DC    TEND        END PROGRAM ADDR                80400340
0809 C  C000    MLSCF DC    /C000       MAIN LINE SEQ CNTL              80400350
080A 0  C000          DC    /0000       COUNTER ENTRY                   80400360
080B 0  FFFF    TERM  DC    /FFFF       TERMINATOR                      80400370
080C 1  0AFD          DC    PEND        LAST PROGRAM ADDR               80400380
080D C  0000          DC                                                80400390
080E 0  0000          DC                                                80400400
080F 0  0000          DC                                                80400410
0810 C  0000          DC                                                80400420
0811 C  0000          DC                                                80400430
0812 0  000C    DDEF  DC    /0C00       DEVICE DEF EDIT FLD             80400440
0813 0  0000          DC                                                80400450
0814 0  0C00          DC                                                80400460
0815 0  000C          DC                                                80400470
0816 0  0000          DC                                                80400480
0817 C  C000          DC                                                80400490
0818 0  C000          DC                                                80400500
0819 C  C000          DC                                                80400510
081A 0  0000          DC                                                80400520
081B 0  C000          DC                                                80400530
081C 0  0000          DC                                                80400540
081D 0  0000          DC                                                80400550
                *                                                       80400560
                *                                                       80400570
                *                                                       80400580
                *                  INTERRUPT ROUTINE                    80400590
                *                                                       80400600
081E C  C000    DVA   DC    /0CC0       AREA CODE FOR DEVICE IE         80400610
                *                                                       80400620
081F 0  0C00    POINT DC    /0C0C                                       80400630
0820 0  6A37          STX   2 XI+1                                      80400640
0821 01 CC000972      XIO   L XIOSD     SENSE DSW                       80400650
0823 0  D037          STO   DSWIT                                       80400660
0824 01 67800866      LDX   I3 INTEX                                    80400670
```



```
0826 01 4F80085D      BSC   I3 HANDL-1                                  80400680
0828 01 F7C00863  SINT  FOR   L3 INTEX-3                                80400690
082A 01 E780C866      AND   I3 INTEX                                    80400700
082C 01 4C18C84E      BSC   L  PINT3,+-   BR IF DSW OK                  80400710
082E 01 66000984      LDX   L2 NIPES      SVC REQ ERROR                 80400720
0830 0  701F          MDX     PINT1                                     80400730
                *                                                       80400740
0831 0  F031  CINT    ECR     INTED       CK DSW FOR 2 SVC REQ          80400750
0832 00 4C0CC000      BSC   L /0CC00      BR IF 2ND DOUBLE INT          80400760
0834 C  902C  CINT1   STO     DSWDI                                     80400770
0835 0  E02D          AND     INTED                                     80400780
0836 0  D02B          STO     DSWID                                     80400790
0837 01 4C200847      BSC   L DINT4,Z     EXIT IF ONLY ONE REC          80400800
0839 0  C027          LD      DSWDI                                     80400810
083A 01 4C18C84E      BSC   L PINT3,+-    BR IF DSW OK                  80400820
083C 01 6600098E      LDX   L2 DINE1                                    80400830
083E 0  7011          MDX     PINT1                                     80400840
                *                                                       80400850
083F 0  E822  CINT2   OR      DSWID                                     80400860
0840 0  D01A          STO     DSWIT                                     80400870
0841 0  F021          ECR     INTED                                     80400880
                *                                                       80400890
0842 01 4C18C84E      BSC   L PINT3,+-    BR IF DSW OK                  80400900
0844 01 66000993      LDX   L2 DINE2                                    80400910
0846 0  7009          MDX     PINT1                                     80400920
                *                                                       80400930
                *                                                       80400940
0847 C  1340  CINT4   SLCA  3 C                                         80400950
0848 0  1001          SLA     1                                         80400960
0849 0  D012          STC     BUMRC       ZERO IF NO IEC BIT            80400970
084A 01 6700C83F      LDX   L3 DINT2      SET SECOND INT SW             80400980
084C C  6BE6          STX   3 DINT1-1                                   80400990
084D 0  7009          MDX     XIT                                       80401000
                *                                                       80401010
084E 01 660009A2  PINT2 LDX   L2 DINE6                                  80401020
0850 01 670009AA  PINT1 LDX   L3 BSYES      CHECK BUSY DSW NEXT           80401030
0852 0  6BB6          STX   3 MLSCF                                     80401040
0853 01 6E0009BF      STX   L2 XBSYX+1                          PRO1    80401050
                *                                                       80401060
0855 0  6200          LDX   2 0                                         80401070
0856 0  6A0F          STX   2 INTEX                                     80401080
                *                                                       80401090
0857 0C 660CC000  XIT   LDX   L2 /0C0C                                  80401100
0859 01 4C80C81F      BSC   I  POINT                                    80401110
                ****************************************************    80401120
                *                                                       80401130
085B C  C000  DSWIT   DC      /CCCC       LAST INTERRUPT DSW            80401140
085C 0  0000  BUMRC   DC      /0000                                     80401150
085D 1  0857          DC      XIT                                       80401160
085E 1  0828  HANDL   DC      SINT        INTERRUPT BR ADFS             80401170
085F 1  0828          DC      SINT                                      80401180
0860 1  C831          DC      DINT                                      80401190
0861 0  0000  DSWDI   DC      /0C00                                     80401200
0862 0  C000  DSWID   DC      /0C00       IDENTIFY INT YET EXP          80401210
                *                                                       80401220
0863 0  5000  INTED   DC      /5CCC       RDR-PCH SVC REQ EXP           80401230
0864 0  4000          DC      /4000       RDR SVC REQ                   80401240
0865 C  1000          DC      /1000       PCH SVC REQ                   80401250
0866 0  0000  INTEX   DC      /0000       INTERRUPT EXPECTED            80401260
                *                         * 1 = READER                  80401270
                *                         * 2 = PUNCH                   80401280
                *                         * 3 = BOTH                    80401290
0867 1  0978          DC      RMASK       READER                        80401300
0868 1  0979          DC      XMASK       PUNCH                         80401310
                ****************************************************    80401320
                *                                                       80401330
                ****************************************************    80401340
0869 00 4480012C  PTBGN BSI   I  BEGIN    CALL MONITOR        * SC      80401350
```

```
0868 1  07FF          PID     DC      PID         ADDR OF PID NO      *      80401360
                      ********************************************         80401370
                      *                                                    80401380
                      *                INITIALIZATION ROUTINE              80401390
                      *                                                    80401400
086C 0  0000          PTILZ   DC      /0C0C       ENTRY POINT          SE  80401410
086D 01 C4000802              LD    L SW0         CK IF AUTO ALIGNMENT     80401420
086F 0  1007                  SLA     7                                    80401430
0870 0  4810                  BSC     -           SKIP IF NO REALIGN       80401440
0871 0  1009                  SLA     9                                    80401450
0872 01 D4000A26              STO   L NIST        SET ALIGN PATTERN SW     80401460
                      *                                                    80401470
0874 01 66000879              LDX   L2 BOSS       SET MAIN LINE SEQ        80401480
0876 0  6A92                  STX     2 MLSCF     * CONTROL FIELD          80401490
0877 01 4C80C86C              BSC   I PTILZ                            SX  80401500
                      ********************************************         80401510
                      *                                                    80401520
                      *                                                    80401530
0879 0  C098          BOSS    LD      DDEF                                 80401540
087A 01 4C28C885              BSC   L BUILD-1,+Z  BR IF DEVICE MINE        80401550
087C 0  62F8                  LDX     2 -8                                 80401560
087D 01 6E000A25              STX   L2 CORCT                               80401570
                      ********************************************         80401580
087F 00 4480C131      BOSS2   BSI   I RECDV       REQUEST DEVICE       * SC 80401590
0881 1  CAD3                  DC      NOPE        DEVICE BUSY          *    80401600
0882 1  0812                  DC      DDEF                             *    80401610
0883 1  C81E                  DC      0?A         AREA CODE            *    80401620
0884 1  080B                  DC      TERM                             *    80401630
                      ********************************************         80401640
                      *                                                    80401650
0885 0  6107                  LDX     1 7         INIT XIO AREA CODES      80401660
0886 01 C500C970      BUILC   LD    L1 XICXX                               80401670
0888 0  E895                  OR      DVA                                  80401680
0889 01 D500C970              STO   L1 XICXX                               80401690
088B 0  71FE                  MDX     1 -2                                 80401700
088C 0  70F9                  MDX     BUILD                                80401710
                      *                                                    80401720
088D 0  1810                  SRA     16          ZERO ROUTINE NUMBER      80401730
088E 01 D4000830              STO   L RID                                  80401740
                      *                                                    80401750
0890 01 660007FF      MGR1    LDX   L2 PID                                 80401760
0892 0  C204                  LD      2 SW1-PID   ASSURE PROPER ENTRY      80401770
0893 0  D022                  STO     SWCMP                                80401780
0894 0  100D                  SLA     13                                   80401790
0895 0  180D                  SRA     13                                   80401800
                      *                                                    80401810
0896 0  4820                  BSC     Z           SET ROUTINE ID           80401820
0897 0  D201                  STO     2 RID-PID                            80401830
                      *                                                    80401840
0896 01 6580C800              LDX   I1 RID        UPDATE THE RID           80401850
089A 0  4818                  BSC     +-                                   80401860
089B 0  7101                  MDX     1 1         INDEX THE ROUTINE NO     80401870
                      *                                                    80401880
089C 01 6D00C800              STX   L1 RID        SET RTN NO AND ADDR      80401890
089E 01 C500C9AE              LD    L1 RTCON-1                             80401900
08A0 0  D202                  STO     2 RAD-PID                            80401910
                      *                                                    80401920
08A1 0  6300                  LDX     3 0         RESTORE CHAR RTN         80401930
08A2 01 6F00CA26              STX   L3 N1S1                                80401940
08A4 01 6F00CA96              STX   L3 DULP+1                              80401950
08A6 0  6301                  LDX     3 1                                  80401960
08A7 01 6F00CA94              STX   L3 DULP-1                              80401970
                      *                                                    80401980
08A9 0C 67000187              LDX   L3 391        SET RECORD LENGTH        80401990
08AB 01 6F00C8D6              STX   L3 WRECK                               80402000
                      *                                                    80402010
08AD 01 4D80C8AE              BSC   I1 RTCON-1    BR TO USER ROUTINE       80402020
                      *                                                    80402030
```



```
                      *                                                    80402040
                      *                                                    80402050
08AF 1  08B7          RTCON   DC      RTN1I       PUNCH ROUTINE            80402060
08B0 1  08C4                  DC      RTN2        READER RTN               80402070
08B1 1  08CC                  DC      RTN3        PCH + RDR CHECK          80402080
08B2 1  08D7                  DC      RTN4I       REPRODUCE TAPE           80402090
08B3 1  08F8                  DC      RTN5I       PCH BIT SW DATA RTN      80402100
08B4 1  0AEE                  DC      PTEND       END ROUTINE              80402110
08B5 1  0AEE                  DC      PTEND       END ROUTINE              80402120
                      *                                                    80402130
08B6 C  0000          SWCMP   DC      /0C00       SW1 COMPARE WORD         80402140
                      ********************************************         80402150
                      *                                                    80402160
                      *                                                    80402170
                      *                MAINLINE TESTS                      80402180
                      *                                                    80402190
                      *                                                    80402200
                      *            TEST 1 - PUNCH TEST                     80402210
                      *                                                    80402220
08B7 00 6500030E      RTN1I   LDX   L1 782        SET FOR 2 RECORDS        80402230
08B9 0  691C                  STX     1 WRECK                              80402240
08BA 00 65000187              LDX   L1 391                                 80402250
08BC 0  69F8                  STX     1 RTN1I+1                            80402260
08BD 01 44000A8E      RTN1    BSI   L MARK        BUILD NEXT CHARACTER SC  80402270
08BF 0  405E                  BSI     XKRDY       PUNCH READY          SC  80402280
08C0 01 4C000961              BSC   L PUNH        PUNCH ONE CHARACTER      80402290
08C2 0  4053          RTN1A   BSI     CRASH       CK IF END ROUTINE    SC  80402300
08C3 0  70F9                  MDX     RTN1                                 80402310
                      *                                                    80402320
                      *            TEST 2 - READER TEST                    80402330
                      *                                                    80402340
08C4 01 44000A8E      RTN2    BSI   L MARK        BUILD NEXT CHARACTER SC  80402350
08C6 0  4067                  BSI     RRDY        READER READY         SC  80402360
08C7 0  7076                  MDX     FEED        CONTROL READER           80402370
08C8 01 440009C0      RTN2A   BSI   L RDIT        READ AND COMPARE     SC  80402380
08CA 0  404B                  BSI     CRASH       CK IF END ROUTINE    SC  80402390
08CB 0  70F8                  MDX     RTN2                                 80402400
                      *                                                    80402410
                      *                                                    80402420
                      *          TEST 3 - PCH-RD + COMPARE                 80402430
                      *                                                    80402440
08CC 01 44000A8E      RTN3    BSI   L MARK        BUILD NEXT CHARACTER SC  80402450
08CE 0  404F                  BSI     XKRDY       PUNCH READY          SC  80402460
08CF 0  405E                  BSI     RRDY        READER READY         SC  80402470
08D0 01 4C00C94D              BSC   L XFEED       PUNCH + CONTROL RDR      80402480
08D2 01 440009C0      RTN3A   BSI   L RDIT        READ AND COMPARE     SC  80402490
08D4 0  4041                  BSI     CRASH       OK IF END OF ROUTINE SC  80402500
08D5 0  70F6                  MDX     RTN3                                 80402510
                      *                                                    80402520
08D6 0  0000          WRECK   DC      /0C00                                80402530
                      *                                                    80402540
                      *          TEST 4 - REPRO PAPER TAPE                 80402550
                      *                                                    80402560
                      *                                                    80402570
08D7 C1 C400C803      RTN4I   LD    L SW1                                  80402580
08D9 C1 4C180890              BSC   L MGR1,+-     BR IF NO EXECUTE RTN     80402590
08DB 0  1010                  SLA     16                                   80402600
08DC 01 D4000A67              STO   L XCHAR       PUNCH FEED HOLE 1ST      80402610
                      *                                                    80402620
08DE 01 C400C803      RTN4    LD    L SW1                                  80402630
08E0 C  F0D5                  EOR     SWCMP                                80402640
08E1 01 4C200890              BSC   L MGR1,Z      BR IF END THIS RTN       80402650
08E3 0  403A                  BSI     XKRDY       PUNCH READY          SC  80402660
08E4 0  4049                  BSI     RRDY        READER READY         SC  80402670
08E5 01 4C00C94D              BSC   L XFEED       PUNCH + CONTROL RDR      80402680
                      *                                                    80402690
08E7 01 CC000976      RTN4A   XIO   L XICRR       READ RDR BUFFER          80402700
08E9 01 C4000A66              LD    L CARED       PLACE CHAR READ IN       80402710
08EB 01 D400CA67              STO   L XCHAR       * OUTPUT AREA
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08ED 0  10A0            SLT     32                                      80402720
08EE 01 CC000972        XIO  L  XIOSD       SENSE DSW                   80402730
08F0 01 4C10C8DE        BSC  L  RTN4,-      BR IF NC DSW ERRORS         80402740
                        *                                               80402750
08F2 0  6116            LDX   1 /0016       PRINT RDR ERROR             80402760
08F3 01 7401CA61        MDX  L  EMESG,1                                 80402770
08F5 01 44000A4C        BSI  L  PRDSW                             MC    80402780
08F7 01 74FFCA61        MDX  L  EMESG,-1                                80402790
                        *                                               80402800
08F9 0  4034            BSI     RRDY        READER READY          SC    80402810
08FA 0  7043            MDX     FEED        CONTROL READER              80402820
                        *       MDX     RTN4                            80402830
                        ********************************************      80402840
                        *                                               80402850
                        *                                               80402860
                        *               ROUTINE FIVE                    80402870
                        *                                               80402880
                        *           PUNCH BIT SWITCH DATA               80402890
                        *                                               80402900
08FB 01 C4000803        RTN5I LD    L   SW1                             80402910
08FD 01 4C18C890        BSC  L  MGR1,+-     BR IF NC EXECUTE RTN        80402920
08FF 0  6300            LDX   3 0                                       80402930
0900 0  7002            MDX     RTN5B                                   80402940
0901 00 67000000        RTN5A LDX  L3 /0000                             80402950
0903 01 C400C805        RTN5E LD    L   SW3                             80402960
0905 0  1300            SLA   3 0                                       80402970
0906 01 D400CA67        STO  L  >CHAR                                   80402980
0908 0  C0F9            LD      RTN5A+1                                 80402990
0909 0  B008            CMP     0                                       80403000
090A 0  6300            LDX   3 0                                       80403010
090B 0  7001            MDX     RTN5D                                   80403020
090C 0  6308            LDX   3 8                                       80403030
090D 0  6BF4            RTN5D STX   3 RTN5A+1                           80403040
090E 01 C400C803        LD   L  SW1                                     80403050
0910 0  F045            EOR     SWCMP                                   80403060
0911 01 4C20C890        BSC  L  MGR1,Z      BR IF END THIS RTN          80403070
0913 0  400A            BSI     XKRDY                                   80403080
0914 0  704C            MDX     PUNH                                    80403090
                        *                                               80403100
0915 0  0000            C       DC      0                               80403110
                        ********************************************      80403120
                        *                                               80403130
                        *                                               80403140
                        *               TEST 5 - PUNCH BIT SWS          80403150
                        *                                               80403160
                        *                                               80403170
                        *               COUNT CHARACTERS ROUTINE        80403180
                        *                                               80403190
0916 0  C000            CRASH DC    /0000       IS RTN COMPLETE     SE  80403200
0917 01 74FFC8D6        MDX  L  WRECK,-1                                80403210
0919 0  7C02            MDX     RASH                                    80403220
                        *                                               80403230
091A 01 4C00C890        BSC  L  MGR1        BR - END OF RECORD          80403240
                        *                                               80403250
091C 01 4C80C916        RASH  BSC  I  CRASH     RET IF RCD NOT CMPLT SX 80403260
                        *                                               80403270
                        ********************************************      80403280
                        *                                               80403290
                        *                                               80403300
                        *               PUNCH READY ROUTINE             80403310
                        *                                               80403320
091E 0  0000            XKRDY DC    /0000                           SE  80403330
091F 0  0852            XIO     XIOSD       SENSE AND SAVE DSW          80403340
0920 0  D062            STO     DSWAS                                   80403350
                        *                                               80403360
0921 0  E057            AND     XMASK       REMOVE RDR NRDY BIT         80403370
                        *                                               80403380
0922 01 4C98C91E        BSC  I  XKRDY,+-    BR IF DSW OKAY          SX  80403390
```



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                        *                                               80403400
0924 0  1007            SLA     7           PRINT DSW ERROR             80403410
0925 0  6105            LDX   1 5                                       80403420
0926 0  C85C            LDD     DSWAS                                   80403430
0927 0  E057            AND     POFF                                    80403440
0928 0  18D0            RTE     16                                      80403450
0929 01 4400CA4C        BSI  L  PRDSW                             MC    80403460
                        *                                               80403470
092B 01 4400CA7F        BSI  L  TIME        PAUSE BEFORE RECHECK  SC    80403480
092D 0  70F1            MDX     XKRDY+1                                 80403490
                        ********************************************      80403500
                        *                                               80403510
                        *                                               80403520
                        *           READER READY ROUTINE                80403530
                        *                                               80403540
092E 0  C000            RRDY  DC    /0000                           SE  80403550
092F 0  0842            XIO     XIOSD       SENSE AND SAVE DSW          80403560
0930 0  D052            STO     DSWAS                                   80403570
                        *                                               80403580
0931 0  E046            AND     RMASK       REMOVE RDR NRDY BIT         80403590
                        *                                               80403600
0932 01 4C98092E        BSC  I  RRDY,+-     BR IF DSW OKAY          SX  80403610
                        *                                               80403620
0934 0  1005            SLA     5           PRINT DSW ERROR             80403630
0935 0  6104            LDX   1 4                                       80403640
0936 0  C84C            LDD     DSWAS                                   80403650
0937 0  E046            AND     ROFF                                    80403660
0938 0  18D0            RTE     16                                      80403670
0939 01 4400CA4C        BSI  L  PRDSW                             MC    80403680
                        *                                               80403690
093B 01 4400CA7F        BSI  L  TIME        PAUSE BEFORE RECHECK  SC    80403700
093D 0  70F1            MDX     RRDY+1                                  80403710
                        ********************************************      80403720
                        *                                               80403730
                        *           CONTROL READER ROLTINE              80403740
                        *                                               80403750
093E 0  6101            FEED  LDX   1 1         SET READER INTRPT       80403760
093F 01 6D00C866        STX  L1 INTEX       * EXPECTED                  80403770
0941 01 6D00C9AB        STX  L1 BSYES+1                                 80403780
                        *                                               80403790
0943 0  C830            XIO     XICFD       FEED READER                 80403800
                        *                                               80403810
0944 0  C82D            XIO     XICSD       SAVE BUSY DSW               80403820
0945 0  D03B            STO     DSWBY                                   80403830
                        *                                               80403840
0946 01 44000A7F        BSI  L  TIME        PAUSE FOR INTRPT        SC  80403850
                        *                                               80403860
0948 0  6111            LDX   1 /0C11       PRINT NC INTRPT ERR         80403870
0949 0  C837            LDD     DSWBY                                   80403880
094A 0  E033            AND     ROFF                                    80403890
094B 0  E82F            OR      DSWR2                                   80403900
094C 0  7052            MDX     DINE5                                   80403910
                        ********************************************      80403920
                        *                                               80403930
                        *           PUNCH AND CONTROL READER            80403940
                        *                   ROUTINE                     80403950
                        *                                               80403960
094D 01 65000834        XFEED LDX  L1 DINT1     RESTORE DOUBLE INT      80403970
094F 01 6D00C833        STX  L1 DINT1-1     * SWITCH                    80403980
                        *                                               80403990
0951 0  6103            LDX   1 3           SET DOUBLE INTRPT           80404000
0952 01 6D00C866        STX  L1 INTEX       * EXPECTED                  80404010
0954 01 6D00C9AB        STX  L1 BSYES+1                                 80404020
                        *                                               80404030
0956 0  0819            XIO     XICXX       FEED AND PUNCH              80404040
0957 0  081C            XIO     XIOFD                                   80404050
                        *                                               80404060
0958 0  0819            XIO     XICSD       SAVE BUSY DSW               80404070
```

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0959 0  D027            STO     DSWBY                                   80404080
                        *                                               80404090
095A 01 44000A7F        BSI  L  TIME        PAUSE FOR INTERRUPT  SC     80404100
                        *                                               80404110
095C 0  6113            LDX  1  /0C13       PRINT NO INTRPT ERR         80404120
095D 0  C023            LD      DSWBY                                   80404130
095E 0  18D0            RTE     16                                      80404140
095F 0  C01D            LD      DSWRX                                   80404150
0960 0  703E            MDX     DINE5                                   80404160
                ********************************************************80404170
                *                                                       80404180
                *               PUNCH ROUTINE                           80404190
                *                                                       80404200
0961 0  6302    PUNH    LDX  3  2           SET PUNCH INTRPT            80404210
0962 01 6F000866        STX  L3 INTEX       * EXPECTED                  80404220
0964 01 6F000A8B        STX  L3 BSYES+1                                 80404230
                        *                                               80404240
0966 0  0809            XIO     XICXX       PUNCH CHARACTER             80404250
                        *                                               80404260
0967 0  680A            XIO     XICSD       SAVE BUSY DSW               80404270
0968 0  D018            STO     DSWBY                                   80404280
                        *                                               80404290
0969 01 44000A7F        BSI  L  TIME        PAUSE FOR INTERRUPT  SC     80404300
                        *                                               80404310
096B 0  6112            LDX  1  /0C12       PRINT NO INTRPT ERR         80404320
096C 0  C814            LDD     DSWBY                                   80404330
096D 0  E011            AND     POFF                                    80404340
096E 0  E80D            OR      DSWX2                                   80404350
096F 0  702F            MDX     DINE5                                   80404360
                ********************************************************80404370
                *                                                       80404380
                *                                                       80404390
                        BSS  E                                          80404400
0970    C000    XICXX   DC      XCHAR       PUNCH ICCC                  80404410
0971 1  0A67            DC      /0100                                   80404420
0971 0  0100    XICSD   DC      /0C0C       SENSE DSW ICCC              80404430
0972 0  000C            DC      /0701                                   80404440
0973 0  0701    XIOFD   DC      /0C00       FEED IOCC                   80404450
0974 0  0000            DC      /C41C                                   80404460
0975 0  0410    XIORR   DC      CARED       READ IOCC                   80404470
0976 1  CA66            DC      /0200                                   80404480
0977 0  0200    RMASK   DC      /FEFF       READER MASK                 80404490
0978 0  FEFF    XMASK   DC      /FBFF       PUNCH MASK                  80404500
0979 0  FBFF            DC      /FFFF       MINUS ONE                   80404510
097A 0  FFFF    DSWRX   DC      /0C0C       RDR BUSY EXP DSW            80404520
097B 0  CC00    DSWX2   DC      /030C       PCH BUSY EXP DSW            80404530
097C 0  C30C    DSWRX   DC      /0F00       DOUBLE BUSY DSW EXP         80404540
097D 0  0F00    ROFF    DC      /0100                                   80404550
097E 0  0100    POFF    DC      /0400                                   80404560
097F 0  0400            DC      /0C00                                   80404570
0980 0  0000    DSWBY   DC      /CC00       LAST BUSY DSW               80404580
0981 0  0000            DC      /CC0C       NOT USED                    80404590
0982 0  C000    DSWAS   DC      /CC0C       LAST DSWER PRINTED          80404600
0983 0  000C            DC      /CC0C                                   80404610
                ********************************************************80404620
                *                                                       80404630
                *               PRINT DSW ERRORS DETECTED               80404640
                *               DURING INTERRUPT                        80404650
                *                                                       80404660
0984 01 658009AB NIPES  LDX  I1 BSYES+1     PRINT DSW ERROR             80404670
0986 01 CC000858        LDD  L  DSWIT       * DETECTED WHILE            80404680
0988 01 E5000978        AND  L1 ROFF-1      * RUNNING RTN 1 OR          80404690
098A 01 ED000863        OR   L1 INTEX-3     * RTN 2                     80404700
098C 0  7105            MDX  1  5                                       80404710
098D 0  7011            MDX     DINE5                                   80404720
                        *                                               80404730
                        *                                               80404740
098E 01 C4000858 DINE1  LD   L  DSWIT       PRINT DSW ERROR             80404750
0990 0  18D0            RTE     16          * DETECTED WHILE
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0991 0  6108            LDX  1  8           * RUNNING RTN 3 OR          80404760
0992 0  700A            MDX     DINE4       * RTN 4                     80404770
                        *                                               80404780
0993 01 C400C85B DINE2  LD   L  DSWIT       SEQ SVC REQ ERROR           80404790
0995 0  18D0            RTE     16                                      80404800
0996 01 C400085C        LD   L  BUMRQ                                   80404810
0998 01 4C20099C        BSC  L  DINE3,Z     BR IF 1ST SVC REQ OK        80404820
099A 0  6109            LDX  1  9                                       80404830
099B 0  7001            MDX     DINE4                                   80404840
                        *                                               80404850
099C 0  6110    DINE3   LDX  1  /0C1C                                   80404860
099D 01 C400C863 DINE4  LD   L  INTED                                   80404870
099F 0  18D0    DINE5   RTE     16                                      80404880
09A0 01 44000A4C        BSI  L  PRDSW                           MC      80404890
                        *                                               80404900
09A2 01 658C0800 DINE6  LDX  I1 RID         RET TO MAINLINE RTN         80404910
09A4 0  C07F            LD      ERRET                                   80404920
09A5 01 4D980ACD        BSC  I1 SORTS-1,+-  BR IF NO ERROR LAST         80404930
                        *                                               80404940
09A7 0  1810            SRA     16          RETURN TO FINISH            80404950
09A8 0  D07B            STO     ERRET       * ALIGNING TAPE             80404960
09A9 0  7017            MDX     READ        * IN READER                 80404970
                ********************************************************80404980
                *                                                       80404990
                *               CHECK BUSY DSW                          80405000
                *                                                       80405010
09AA 0C 65000000 BSYES  LDX  L1 /CC0C                                   80405020
09AC 0  C0D4            LD      DSWBY                                   80405030
09AD 01 E5000977        AND  L1 RMASK-1                                 80405040
09AF 01 F500097A        EOR  L1 DSWR2-1                                 80405050
09B1 01 4C18C98B        BSC  L  XBSE,+-     BR IF DSW OK                80405060
                        *                                               80405070
09B3 0  C8CD            LDD     DSWBY       PRINT DSW ERROR             80405080
09B4 01 E500C97D        AND  L1 ROFF-1                                  80405090
09B6 01 ED00C97A        OR   L1 DSWR2-1                                 80405100
09B8 0  18D0            RTE     16                                      80405110
09B9 01 44000A4C        BSI  L  PRDSW                           MC      80405120
                        *                                               80405130
09BB 0  6100    XBSE    LDX  1  0           BLOCK PAUSE FOR INT         80405140
09BC 01 6D000B0A        STX  L1 MLSCF+1     * ROUTINE REENTRY           80405150
                        *                                               80405160
09BE 0C 4C00C000 XBSYX  BSC  L  /CCCC       BRANCH TO SOMEWHERE PM01    80405170
                ********************************************************80405180
                *                                                       80405190
                *                                                       80405200
                *               COMPARE ROUTINE                         80405210
                                                                SE      80405220
09C0 0  0000    RDIT    DC      /0C00                                   80405230
09C1 01 C400CA66 READ   LD   L  CARED       SAVE LAST CHAR READ         80405240
09C3 01 D400CA69        STO  L  LREAD                                   80405250
09C5 0  C8B0            XIO     XICRR       READ CHARACTER              80405260
                        *                                               80405270
09C6 01 C4000A66        LD   L  CARED       SAVE CHARACTER READ         80405280
09C8 0  D05E            STO     SAVIT                                   80405290
                        *                                               80405300
09C9 01 2C410A66        STS  L  CARED,/41   STO PROT READ AREA          80405310
09CB 0  C85C            LDD     K8040                                   80405320
09CC 0  C8A9            XIO     XICRR       FORCE READ ERROR            80405330
09CD 0  08A4            XIO     XIOSD       SENSE DSW                   80405340
09CE 01 2C400A66        STS  L  CARED,/40   CLEAR STO PROT BIT          80405350
09D0 0  D0B2            STO     DSWAS                                   80405360
09D1 0  E0A6            AND     RMASK                                   80405370
09D2 0  F055            EOR     K8040                                   80405380
09D3 01 4C1809E0        BSC  L  RDITA,+-    BR IF DSW OK                80405390
                        *                                               80405400
09D5 0  C8AD            LDD     DSWAS       PRINT DSW ERROR             80405410
09D6 0  E0A7            AND     ROFF                                    80405420
09D7 0  E850            OR      K8040                                   80405430
09D8 0  18D0            RTE     16
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                         *
09D9 0  6117             LDX   1 /0017                                  80405440
09DA 0  4071             BSI     PRDSW                                  80405450
                         *                                              80405460
09DB 0  C048             LD      SAVIT      CHECK IF SAME CHAR          80405470
09DC 01 B400CA66         CMP   L CARED      WAS READ                    80405480
09DE 0  1000             NOP                                            80405490
09DF 0  701E             MDX     RDIT1      NO - ERROR IN READ          80405500
                         *                                              80405510
09E0 0  C895             RDITA XIO       XICRR      READ                80405520
                         *                                              80405530
09E1 01 C400CA67         RDITC LD    L   XCHAR      DC CHARACTERS       80405540
09E3 01 F400CA66             ECP   L   CARED       COMPARE             80405550
09E5 0  1808                 SRA       8                                80405560
09E6 01 4C20CACA             BSC   L   RDIT2,Z     BR IF NCN COMPARE   80405570
09E8 01 7401CA25             MDX   L   CORCT,1                          80405580
09EA 0  705F                 MDX       RDITE      EXIT                80405590
                         *                                              80405600
09EB 0  683A                 STX     0 N1ST                             80405610
09EC 0C 6500A001             LDX   L1 /AC01       PRINT TAPE ALIGNED  80405620
09EE 0C 6600AFED             LDX   L2 /AFED                           80405630
09F0 C  407A                 BSI       PTLOG                          80405640
09F1 01 C400C802             LD    L   SWC        TURN OFF REALIGN SW 80405650
09F3 0  1009                 SLA       9                                80405660
09F4 0  1809                 SRA       9                                80405670
09F5 01 D400C802             STO   L   SWC                              80405680
09F7 0  1810             RDITE SRA       16         RESET BIT LINE CHECK80405690
09F8 0  C031                 STO       BTLNE                            80405700
09F9 C  C031                 LD        KFF00                            80405710
09FA 0  C02E                 STO       NOLNE                            80405720
09FB 0  6164                 LDX     1 10C                              80405730
09FC 0  692F                 STX     1 TRIAL                            80405740
                         *                                              80405750
09FD 0  704C                 MDX       RDITE      EXIT                80405760
                         *                                              80405770
09FE 0  18D0             RDIT1 RTE       16                             80405780
09FF C  C066                 LD        CARED                            80405790
0A00 0  6118                 LDX     1 /18        SET MESSAGE ID      80405800
0A01 01 7401CA61             MDX   L   EMESG,1                          80405810
0A03 01 4400CA4C             BSI   L   PRDSW                            80405820
0A05 01 74FFCA61             MDX   L   EMESG,-1                        80405830
0A07 0  C01F                 LD        SAVIT                            80405840
0A08 C  C05E                 STO       XCHAR                            80405850
0A09 0  70D7                 MDX       RDITD                            80405860
                         *                                              80405870
0A0A 0  C01B             RDIT2 LD        N1ST                           80405880
0A0B 01 4C20CA2D              BSC   L   RDIT4,Z     BR IF NCT FIRST ERR 80405890
0A0D 0  C01C                  LD        BTLNE      BIT LINE OPEN CK    80405900
0A0E 0  E057                  OR        CARED                          80405910
0A0F 0  C01A                  STO       BTLNE                          80405920
                         *                                              80405930
0A10 0  C018                  LD        NOLNE      BIT LINE SHORT CK   80405940
0A11 0  E054                  AND       CARED                          80405950
0A12 0  C016                  STO       NOLNE                          80405960
                         *                                              80405970
0A13 01 74FFCA2C              MDX   L   TRIAL,-1   COUNT DOWN 100 MAX   80405980
0A15 0  7007                  MDX       RDIT3                          80405990
                         *                                              80406000
0A16 0  6119                  LDX     1 /19                            80406010
0A17 C  C011                  LD        NOLNE                          80406020
0A18 0  18D0                  RTE       16                             80406030
0A19 G  C010                  LD        BTLNE                          80406040
0A1A 0  F010                  ECR       KFF00                          80406050
0A1B 0  4030                  BSI       PRDSW      PRINT NC ALIGN ERROR80406060
0A1C 0  70DA                  MDX       RDITD                          80406070
                         *                                              80406080
                         *                                              80406090
0A1D 0  61F8             RDIT3 LDX     1 -8                             80406100
                                                                        80406110
```



```
0A1E 0  6906                 STX     1 CORCT                            80406120
0A1F 01 4400C92E             BSI   L   RRDY       READER READY      SC 80406130
0A21 0  6802                 STX     0 ERRET                            80406140
0A22 01 4C00093E             BSC   L   FEED       CONTROL READER       80406150
                         *                                              80406160
                         *                                              80406170
0A24 0  0000             ERRET DC        /0000      RET TO CMPRE IF SET 80406180
0A25 0  0000             CORCT DC        /0000      TAPE ALIGNMENT      80406190
0A26 0  0000             N1ST  DC        /0000    * WORK AREAS          80406200
0A27 0  0000             SAVIT DC        /0000      SAVED CHARACTER     80406210
0A28 0  8040             K8040 DC        /8040                          80406220
0A29 0  FF00             NOLNE DC        /FF00      BIT LINE SHORT CK WD80406230
0A2A 0  0000             BTLNE DC        /0000      BIT LINE OPEN CK WD 80406240
0A2B 0  FF00             KFF0C DC        /FF00      CONSTANT            80406250
0A2C 0  0064             TRIAL DC        10C        ALIGNMENT COUNTER   80406260
                         *                                              80406270
0A2D 01 C400C802         RDIT4 LD    L   SWC                            80406280
0A2F 0  1008                   SLA       8                              80406290
0A30 01 4C100A35               BSC   L   RDIT6,-    BR IF NO REALIGN    80406300
0A32 0  1008                   SLA       8                              80406310
0A33 0  E0F2                   STO       N1ST                           80406320
0A34 C  70E8                   MDX       RDIT3                          80406330
                         *                                              80406340
                         *                                              80406350
                         *                                              80406360
0A35 0  6114             RDIT6 LDX     1 /0014      PRINT DATA READ ERR 80406370
0A36 0  C031                   LD        LCHAR                          80406380
0A37 0  F02F                   EOR       XCHAR                          80406390
0A38 01 4C180A3E               BSC   L   RDIT5,+-   BR IF BUF S/NB CNGD  80406400
0A3A 0  C028                   LD        CARED                          80406410
0A3B 0  F02D                   EOR       LREAD                          80406420
0A3C 0  4818                   BSC       +-         BR IF RCR BUF CNGED 80406430
0A3D 0  6115                   LDX     1 /0015                          80406440
0A3E 0  C028             RDIT5 LD        XCHAR                          80406450
0A3F 0  1898                   SRT       24                             80406460
0A40 0  1088                   SLT       8                              80406470
0A41 0  C024                   LD        CARED                          80406480
0A42 00 6600CADA               LDX   L2  /DADA                          80406490
0A44 0  6A21                   STX     2 CARED                          80406500
0A45 01 7401CA61               MDX   L   EMESG,1                        80406510
0A47 0  4004                   BSI       PRDSW                      MC  80406520
0A48 01 74FFCA61               MDX   L   EMESG,-1                      80406530
                         *                                              80406540
0A4A 01 4C8C09C0         RDITE BSC   I   RDIT                       SX 80406550
                         ********************************************** 80406560
                         *                                              80406570
                         *                                              80406580
                         *          PRINT ERROR ROUTINE                 80406590
                         *                                              80406600
0A4C 0  0000             PRDSW DC        /0C0C      PRINT ERROR RTN     ME 80406610
                         *                                              80406620
0A4D 0  D816                   STD       EMESG+3    SAVE DATA WAS + S/B 80406630
                         *                                              80406640
0A4E 0  6914                   STX     1 EMESG+2    SAVE MESSAGE ID NO  80406650
0A4F 0  C01A                   LD        KEC00                          80406660
0A50 G  E812                   CR        EMESG+2                        80406670
0A51 0  C011                   STO       EMESG+2                        80406680
********************************************************************** 80406690
0A52 0C 448C0130         ERRSW BSI   I   ERROR                      * SC 80406700
0A54 1  0A61                   DC        EMESG      MESSAGE ADDR    *   80406710
0A55 1  0A5A                   DC        CKDSX      BUSY RETURN ADDR*   80406720
0A56 1  0A57                   DC        ERLOP      LOOP ON ERR ADDR*   80406730
********************************************************************** 80406740
0A57 01 65800A4C         ERLOP LDX   I1  PRDSW      NORMAL + LOOP RETS  80406750
0A59 0  7002                   MDX       PDSWX                          80406760
                         *                                              80406770
0A5A 01 6500CA52         CKDSX LDX   L1  ERDSW      BUSY RETURN TO CALL 80406780
0A5C 01 6D00C8C9         PDSWX STX   L1  MLSCF                          80406790
```

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0A5E 0C 4C80012D          BSC  I  START                                  MX   80406800
                          *                                                    80406810
0A60     0000             BSS  E                                               80406820
0A60 0   1000     TIMEX  DC       /1C00       COUNTER                        80406830
0A61 0   0002     EMESC  DC       /0C02       WORD COUNT                     80406840
0A62 C   0000            DC       /0000       HEX      OUTPUT                80406850
0A63 0   0000            DC       /0000       MSG ID                         80406860
0A64 0   0000            DC       /0CC0       DSWAS                          80406870
0A65 0   0000            DC       /0C00       DSW S/B                        80406880
                          *                                                    80406890
                          *                                                    80406900
0A66 0   0000     CAREC  DC       /0C00       CHARACTER READ                 80406910
0A67 0   0000     XCHAR  DC       /0C0C       PUNCH OUTPUT CHAR              80406920
0A68 0   0000     LCHAR  DC       /0C00       PREVIOUS OUTPUT CHAR           80406930
0A69 0   0000     LREAD  DC       /0C00       PREVIOUS CHAR READ             80406940
0A6A 0   E000     KEOOC  DC       /EC00                                      80406950
                          ********************************************       80406960
                          *                                                    80406970
                          *                                                    80406980
                          *                LOG MESSAGE ROUTINE                 80406990
                          *                                                    80407000
0A6B C   0000     PTLOC  DC       /0C00                                  ME   80407010
0A6C 0   6910            STX   1 LGMS+2      SAVE MESSAGE ID                 80407020
                          *                                                    80407030
0A6D 0   6A10            STX   2 LGMS+3      SAVE MODIFIERS                  80407040
                          ********************************************       80407050
0A6E 00 4480012F  PTLOE  BSI  I  LOG                                    * SC 80407060
0A70 1   0A78            DC       LGMS       ADDR OF MESSAGE            *   80407070
0A71 1   0A75            DC       PTLO2      BUSY RETURN ADDR           *   80407080
0A72 C   0000            DC       /CC00      RUN                        *   80407090
                          ********************************************       80407100
0A73 0   C0F7            LD       PTLOG      NORMAL RETURN                   80407110
0A74 0   7001            MDX      PTLO1                                      80407120
0A75 C   CC04     PTLO2  LD       LGMS1      BUSY RETURN                     80407130
0A76 01 D400C809  PTLO1  STO  L  MLSCF                                      80407140
0A78 0C 4C80012D          BSC  I  START                                  MX   80407150
                          *                                                    80407160
0A7A     CCCO             BSS  E                                             80407170
0A7A 1   0A6E     LGMS1  DC       PTLO6                                      80407180
0A7B C   0001     LGMS   DC       1          WORD COUNT                      80407190
0A7C 0   0000            DC       /0C00                                      80407200
0A7D C   0000            DC       /0C00      MESSAGE ID NUMBER               80407210
0A7E C   0000            DC       /0C0C      MODIFIER MESSAGE                80407220
                          ********************************************       80407230
                          *                                                    80407240
                          *                TIMED DELAY ROUTINE                 80407250
                          *                                                    80407260
0A7F 0   CCCO     TIME   DC       /CC00                                  SE   80407270
0A80 0C 65001000          LDX  L1 /1C00       SET UP COUNTER                  80407280
0A82 C   69DD             STX   1 TIMEX                                      80407290
0A83 01 74FFCA6C          MDX  L  TIMEX,-1                                   80407300
0A85 C   7002             MDX     TIME1                                      80407310
0A86 01 4C80CA7F          BSC  I  TIME        EXIT TIME UP               SX   80407320
0A88 01 660C0A83  TIME1   LDX  L2 TIME+4      SET FOR REENTRY                 80407330
0A8A 01 6E0CC30A          STX  L2 MLSCF+1                                    80407340
0A8C 0C 4C80C12D          BSC  I  START                                      80407350
                          ********************************************       80407360
                          *                                                    80407370
                          *                BUILD NEXT CHARACTER                80407380
                          *                ROUTINE                             80407390
                          *                                                    80407400
0A8E 0   0000     MARK   DC       /0C00                                  SE   80407410
0A8F 0   C0D7            LD       XCHAR      SAVE LAST CHARACTER             80407420
0A90 0   1808            SRA      8                                          80407430
0A91 C   1008            SLA      8                                          80407440
0A92 0   C0D5            STO      LCHAR                                      80407450
                          *                                                    80407460
0A93 00 65000001          LDX  L1 1           INIT TEST XR1                  80407470
```



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0A95 0C 66000000  CULP   LDX  L2 0                XR2                     80407480
0A97 01 4E800ABF          BSC  I2 WHAT        GO BUILD CHARACTER           80407490
                          *                                                80407500
0A99 01 C50CCAC3  NRIPX  LD   L1 BITSX       START NEW RIPPLE              80407510
0A9B 0   D0CB            STO      XCHAR     * PATTERN                      80407520
0A9C 0   6201            LDX   2  1                                       80407530
0A9D 0   701C            MDX      EXITX                                   80407540
                          *                                                80407550
0A9E 0   C0C8     SRIPX  LD       XCHAR      SHIFT RIPPLE PATTERN         80407560
0A9F 0   1001            SLA      1                                       80407570
0AA0 0   D0C6            STO      XCHAR                                   80407580
0AA1 0   4820            BSC      Z          SKIP NEXT CH NC BITS         80407590
0AA2 0   7018            MDX      EXITX                                   80407600
0AA3 0   6202            LDX   2  2                                       80407610
0AA4 0   C01E            LD       BITSX      PLACE ALL BIT CHAR           80407620
0AA5 0   D0C1            STO      XCHAR                                   80407630
0AA6 0   6925            STX   1  COUNX                                   80407640
                          *                                                80407650
0AA7 C1 74FFCACC  BARX   MDX  L  COUNX,-1     SKIP WHEN CCUNX GO 0         80407660
0AA9 C   7011            MDX      EXITX                                   80407670
0AAA 0   6200            LDX   2  0                                       80407680
0AAB 0   7101            MDX   1  1                                       80407690
0AAC 0   6920            STX   1  KOUNX                                   80407700
0AAD 01 74F80ACD         MDX  L   KOUNX,-8     SKIP EXCEPT END RIPPE      80407710
0AAF 0   7001            MDX      ENRIX      BR TO END RIPPLE ROUT        80407720
0AB0 0   700A            MDX      EXITX      BR TO EXIT                   80407730
                          *                                                80407740
0AB1 0   6203     ENRIX  LDX   2  3          END RIPPLE PATTERN           80407750
0AB2 C   7008            MDX      EXITX                                   80407760
                          *                                                80407770
0AB3 0   C018     ALLBX  LD       COUNX      ALL CHARS PATTERN            80407780
0AB4 0   D0B2            STO      XCHAR                                   80407790
0AB5 0   800E            A        ONEEX      ADD ONE I. E. 0100           80407800
0AB6 0   D015            STO      COUNX                                   80407810
0AB7 01 4C20CABB         BSC  L   EXITX,Z                                 80407820
                          *                                                80407830
                          *                                                80407840
0AB9 0   6101                     LDX   1  1          REINITIALIZE         80407850
0ABA 0   6200                     LDX   2  0                               80407860
0ABB 0   69D8     EXITX  STX   1  DULP-1                                   80407870
0ABC 0   6AD9            STX   2  DULP+1                                  80407880
0ABD 01 4C80CA8E         BSC  I   MARK         EXIT                   SX   80407890
                          *                                                80407900
                          *                                                80407910
0ABF 1   0A99     WHAT   DC       NRIPX      RECORD CONTROL ADRS          80407920
0AC0 1   0A9E            DC       SRIPX                                   80407930
0AC1 1   0AA7            DC       BARX                                    80407940
0AC2 1   0AB3            DC       ALLBX                                   80407950
                          *                                                80407960
                          *                                                80407970
0AC3 0   FF00     BITSX  DC       /FF0C      CHARACTER PATTERN            80407980
0AC4 0   0100     CNEEX  DC       /0100    * CONSTANTS                    80407990
0AC5 0   00C0            DC       /CCC0                                   80408000
0AC6 C   00E0            DC       /00E0                                   80408010
0AC7 0   00F0            DC       /CCF0                                   80408020
0AC8 0   00F8            DC       /00F8                                   80408030
0AC9 0   00FC            DC       /0CFC                                   80408040
0ACA 0   00FE            DC       /0CFE                                   80408050
0ACB 0   00FF            DC       /0CFF                                   80408060
                          *                                                80408070
0ACC C   0000     COUNX  DC       /CC00      WORK AREAS                   80408080
0ACD 0   0000     KOUNX  DC       /0C00                                   80408090
                          ********************************************     80408100
                          *                                                80408110
                          *                                                80408120
                          *          ADDRESSES FOR RETURN TO               80408130
                          *            MAINLINE AFTER INTRPT               80408140
0ACE 1   0BC2     SORTS  DC       RTN1A      ROUTINE 1                    80408150
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0ACF 1  08C8              DC      RTN2A       ROUTINE 2                    80408160
0AD0 1  08D2              DC      RTN3A       ROUTINE 3                    80408170
0AD1 1  08E7              DC      RTN4A       ROUTINE 4                    80408180
0AD2 1  0901              DC      RTN5A       ROUTINE 5                    80408190
                     *                                                     80408200
                     *                                                     80408210
0AD3 01 65000879    NOPE  LDX  L1 BOSS        TRY AGAIN - LATER            80408220
0AD5 01 6D000809          STX  L1 MLSCF                                     80408230
0AD7 00 4C800120          BSC  I  START                                     80408240
                     *                                                     80408250
                     *                                                     80408260
0AD9 0  0000        TEND  DC      /0000                                   80408270
0ADA 00 6500030E          LDX  L1 782         SET RTN1 FOR TWO REC         80408280
0ADC 01 6D000888          STX  L1 RTN1I+1                                   80408290
0ADE 00 67007FFF          LDX  L3 /7FFF                                     80408300
0AE0 01 C4000866    TEND1 LD   L  INTEX                                     80408310
0AE2 01 4C18CAE6          BSC  L  TEND2,+-    BR IF INTRPT NOT EXP          80408320
0AE4 0  73FF              MDX   3 -1                                        80408330
0AE5 0  70FA              MDX     TEND1                                     80408340
0AE6 01 2C40CA66    TEND2 STS  L  CARED,/40                                 80408350
                    ***************************************               80408360
0AE8 00 44800132          BSI  I  RELDV       RELEASE DEVICE      *         80408370
0AEA 1  0812              DC      DDEF                            *         80408380
0AEB 1  0808              DC      TERM                            *         80408390
                    ***************************************               80408400
0AEC 01 4C80CAD9          BSC  I  TEND                                      80408410
                     *                                                     80408420
                     *                                                     80408430
0AEE 01 6D000A25    PTEND STX  L1 CORCT                                     80408440
                    ***************************************               80408450
0AF0 00 4C80012E          BSC  I  END         END PROGRAM         * SC      80408460
                    ***************************************               80408470
0AF2    0000              BSS  E                                            80408480
0AF2                      ORG     PID+/2FE                                  80408490
0AFD 0  0000        PEND  DC                                                80408500
0AFE    0869              END     PTBGN                                     80408510
```


CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
ALLBX	0AB3	0AC2
BARX	0AA7	0AC1
BEGIN	012C	00C0,0E69
BITSX	0AC3	CA59,0AA4
BOSS	0879	C874,0AD3
BOSS2	087F	
BSYES	C9AA	0850,C941,C954,0964,C984
BTLNE	0A2A	C9F8,0A0D,0A0F,0A19
BUILD	0886	C87A,0E8C
BUMRC	085C	C849,0596
CARED	0A66	C8E9,0576,C9C1,05C6,09C9,05CE,09DC,05E3,09FF,0A0E, 0A11,0A3A,0A41,0A44,0AE6
CKDSX	0A5A	CA55
CORCT	0A25	C87D,05E8,0A1E,0AEE
COUNX	0ACC	0AA6,0AA7,0AB3,0AB6
CRASH	0016	08C2,08CA,C8D4,051C
DDEF	0812	C879,CE82,0AEA
DINE1	098E	C83C
DINE2	0993	C844
DINE3	099C	C958
DINE4	099D	0952,0598
DINE5	099F	C94C,05E0,096F,058D
DINE6	09A2	C84E
DINT	0831	C860
DINT1	0834	C84C,C54D,094F
DINT2	083F	C84A
DINT4	0847	0837
DSWAS	0983	C920,0526,C93C,0536,C9D0,C5D5
DSWBY	0981	C945,0549,C959,055D,C968,056C,09AC,09B3
DSWDI	0861	C834,0E35
DSWID	0862	C836,0E3F
DSWIT	085B	0823,C84C,C986,C58E,C953
DSWRX	097D	095F
DSWR2	097B	C94B,05AF,C9B6
DSWX2	097C	09EC
DULP	0A95	C8A4,0EA7,CABB,0ABC
DVA	C81E	08E3,CE88
EMESG	0A61	08F3,CEF7,0A01,0A05,CA45,CA48,0A4D,0A4E,0A50,0A51, 0A54
END	012E	00C0,0AF0
ENRIX	0AB1	CAAF
EPA	0808	
ERDSW	0A52	CA5A
ERLOP	0A57	0A56
ERRET	0A24	C9A4,05AB,CA21
ERROR	0130	00C0,0A52
EXITX	0ABB	CA5D,0AA2,0AA9,0ABC,0AB2,0AB7
FEED	093E	C8C7,08FA,CA22
HALT	0133	
HANDL	085E	C826
INTED	0863	0831,0E35,C841,099D
INTEX	0866	C824,CE28,C82A,C856,C93F,0552,C962,058A,0AE0
KE000	0A6A	0A4F
KFF00	0A28	C9F9,CA1A
KOUNX	0ACD	CAAC,0AAD
K8C40	0A28	09CB,05D2,09D7
LCHAR	0A68	0A3E,0A92
LGMS	0A7B	CA6C,0A6D,0A70
LGMS1	CA7A	0A75
LOG	012F	00C0,0A6E
LREAD	0A69	09C3,0A3B
MARK	0A8E	C8ED,0EC4,08CC,0ABD
MGR1	C890	C8D9,0EE1,C8FD,0511,091A
MLSCF	0809	C852,CE76,C98C,0A5C,CA76,0A8A,0AD5
NIPES	0984	082E

NOLNE	0A29	C9FA,CA1C,CA12,0A17
NOPE	0AD3	C8E1
NRIPX	CA99	CABF
NIST	0A26	C872,C8A2,C9EB,0ACA,0A33
O	0915	C9C9
ONEEX	0AC4	0AB5
PDSWX	CA5C	CA59
PEND	CAFD	C8CC
PID	C7FF	C66B,C890,C892,C897,C8A0,CAF2
PINT1	0850	C830,C83E,C846
PINT3	084E	C82C,C83A,C842
POFF	097F	C927,C9ED
POINT	C81F	C859
PRDSW	CA4C	C8F5,C929,C935,09AC,C9B9,09DA,0A03,0A1B,0A47,0A57
PTBGN	0869	CAFE
PTEND	CAEE	C8B4,C8B5
PTILZ	086C	C8D6,C8C7,C877
PTLOG	CA6B	C9FG,CA73
PTLO1	CA76	CA74
PTLO2	CA75	CA71
PTLO6	CA6E	CA7A
PUNH	0961	08C0,0914
RAD	0801	C8A0
RASH	0910	0919
RDIT	09C0	C8C8,C8D2,CA4A
RDITA	C9E0	C9D3
RDITD	09F7	CA1C
RDITE	0A4A	C9EA,09FD
RDITC	09E1	CAC9
RDIT1	C9FE	C9DF
RDIT2	CA0A	C9E6
RDIT3	CA1D	CA15,0A34
RDIT4	CA2D	CACB
RDIT5	CA3E	CA38
RDIT6	0A35	CA30
READ	09C1	C9A9
RELDV	0132	CCCO,0AE8
REQDV	C131	CCCO,C87F
RID	08CC	C8EE,C897,C85E,C85C,C9A2
RMASK	C978	C867,C931,C9AD,C9D1
ROFF	097E	C937,C948,C988,C9B4,C9D6
RRDY	092E	08C6,C8DF,C8E4,C8F9,C932,C93D,CA1F
RTCON	08AF	C85E,CEAD
RTN1	C8BD	08C3
RTN1A	08C2	0ACE
RTN1I	C8B7	C8AF,C8BC,CADC
RTN2	C8C4	C8B0,C8CB
RTN2A	C8C8	CACF
RTN3	C8CC	C821,08D5
RTN3A	08D2	CAC0
RTN4	08DE	C8F0
RTN4A	08E7	CAC1
RTN4I	C8D7	C8E2
RTN5A	0901	09C8,C9CD,CAD2
RTN5B	C903	C9C0
RTN5D	09CD	C9CB
RTN5I	08FB	08B3
SAVIT	0A27	09C8,09DB,CA07
SINT	0828	085E,085F
SORTS	CACE	09A5
SRIPX	CA9E	CAC0
START	012D	0JC0,CA5E,CA78,0A8C,CAD7
SWCMP	0886	C853,08EC,C910
SW0	0802	C86D,C9F1,C9F5,0A2D
SW1	0803	C852,08D7,C8DE,C8F8,C9CE
SW2	0804	
SW3	0805	C9C3
TEND	0AD9	08C8,0AEC

TEND1	CAE0	0AE5
TEND2	CAE6	0AE2
TERM	080B	C8B4,0AEB
TIME	0A7F	092B,0938,C946,095A,0969,CA86,0A88
TIMEX	0A60	0A82,0A83
TIME1	0A88	CA85
TRIAL	CA2C	C9FC,0A13
WHAT	0ABF	0A57
WRECK	08D6	08AB,CEB5,C917
XBSE	09BB	09B1
XBSYX	09BE	0853
XCHAR	0A67	08DC,0EEB,C906,0S7C,C9E1,CAC8,0A37,0A3E,0A8F,0A9B, 0A5E,0AAC,CAA5,0AB4
XFEED	094D	C8DC,CEE5
XIOFD	0974	C943,0557
XIORR	0976	C8E7,C9C5,09CC,05EC
XIOSD	0972	0821,CEEE,C91F,0S2F,C944,C953,C967,05CD
XIOXX	0970	0886,CE89,C956,C96E
XIT	0857	C820,CE4D,C85D
XKRDY	091E	08BF,0ECE,C8E3,0513,0922,052D
XMASK	0979	0868,0521

1627 FUNCTION TEST

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1627 FUNCTION TEST

1. PURPOSE

THE PURPOSE OF THE 1627 PLOTTER DIAGNOSTIC TEST IS TO EXECUTE THE DIFFERENT MOVEMENTS OF THE PLOTTER AND TO CHECK THE CABLES FOR CORRECT ADJUSTMENT.

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

THIS PROGRAM MUST RUN UNDER CONTROL OF THE DIAGNOSTIC MONITOR. THE DIAGNOSTIC MONITOR PROGRAM USES 2,047 STORAGE WORDS, AND THIS PROGRAM USES 1024 STORAGE WORDS.

2.2 EQUIPMENT PREREQUISITES

6.1 EDIT

THE FOLLOWING EQUIPMENT IS REQUIRED.

A. 1801 OR 1802 DATA ACQUISITION SYSTEM.

B. 1627 PLOTTER MODEL 1 OR 2

3. USE PROCEDURE

3.1 PROGRAM LOADING

STANDARD LOADING PROCEDURE AS DESCRIBED IN THE DIAGNOSTIC MONITOR USE PROCEDURE.

3.2 PROGRAM OPERATION

STANDARD MONITOR OPERATING PROCEDURES APPLY. THESE PROCEDURES ARE SUMMARIZED HERE. SEE DM USE PROCEDURE FOR DETAILS.

1. CLEAR STORAGE
2. LOAD DIAGNOSTIC MONITOR
3. SELECT MODE OF EXECUTION
4. SELECT MONITOR CONTROL OPTIONS
5. SELECT PROGRAM OPTIONS FROM,

TABLE 0 PROGRAM CONTROL FUNCTION
TABLE 1 ROUTINE SELECT FUNCTION
TABLE 2 MANUAL FUNCTION CONTROL

6. INSTRUCT MONITOR TO EXECUTE

TABLE 0 CONTROL FUNCTION

SENSE/PROGRAM 0 1 2 3 4 5 6 7	1. SET FUNCTION 00 IN SENSE/PROGRAM SWITCHES 0 AND 1. 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. 3. SET DESIRED CONTROL OPTIONS IN DATA ENTRY SWITCHES 0-15. 4. PRESS CONSOLE INTERRUPT.
0 0 0 0 0 1 0 1	

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
1.....	BYPASS PRINTOUT

TABLE 1 ROUTINE SELECTION

SENSE/PROGRAM 0 1 2 3 4 5 6 7
0 1 0 0 0 1 0 1

1. SET FUNCTION 01 IN SENSE/PROGRAM SWITCHES 0 AND 1.
2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7.
3. SET DESIRED ROUTINE NUMBER IN DATA ENTRY SWITCHES 0-15.
4. PRESS CONSOLE INTERRUPT.

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
0 0 1	ROUTINE 1- PEN UP-DOWN OCTAGON TEST
0 1 0	ROUTINE 2- REGISTRATION TEST
0 1 1	ROUTINE 3- SWING TEST
1 0 0	ROUTINE 4- STRESS TEST (WINDMILL)
1 0 1	ROUTINE 5- MANUAL CONTROL

TABLE 2 MANUAL FUNCTION CONTROL

SENSE/PROGRAM 0 1 2 3 4 5 6 7
1 0 0 0 0 1 0 1

1. SET FUNCTION 10 IN SENSE/PROGRAM SWITCHES 0 AND 1.
2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7.
3. SET DIRECTION CONTROL IN DATA ENTRY SWITCHES 8 THRU 13.
4. PRESS CONSOLE INTERRUPT.

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
. . . .	NOT USED
. . . .	NOT USED
. . . . . 1.....	PEN UP
. . . . 1.....	PEN LEFT
. . . 1.....	PEN RIGHT
. . 1.....	PAPER UP
. 1.....	PAPER DOWN
1.....	PEN DOWN
1.....	SELECT SECOND 1627

3.3 PROGRAM HALTS

THIS PROGRAM HAS NO WAITS.

3.4 PROGRAM TERMINATION

STANDARD MONITOR TERMINATION

4. PRINTOUTS

ALL MESSAGES ARE GENERATED BY THE MONITOR PRINT ROUTINE AND ARE IN STANDARD MONITOR FORMAT.

4.1 COMMAND MESSAGES

0500 C001 000R AAAA AIDE
THE PLOTTER IS NOT READY. THIS INDICATES THAT THERE IS NO POWER.

4.2 ERROR MESSAGES

0500 E001 000R AAAA ICED
THIS INDICATES A FAILURE TO RECEIVE AN INTERRUPT AFTER AN XIO COMMAND WAS GIVEN.

0500 E002 000R AAAA ADOO
THE PLOTTER WAS BUSY WHEN THE OSW WAS SENSED. THIS WOULD INDICATE THAT AN XIO COMMAND WAS IN PROCESS OR THE OSW BUSY BIT CANNOT BE TURNED OFF.

5. COMMENTS

5.1 ROUTINE 1 (PEN UP-PEN DOWN OCTAGON TEST)

THE PURPOSE OF THIS ROUTINE IS TO TEST THE CAPABILITY OF THE PLOTTER TO EXECUTE THE PEN UP AND PEN DOWN PLOTTER COMMANDS. IN THIS ROUTINE, AS IN THE OTHER PLOTTER PATTERN GENERATING ROUTINES, AN ADDRESS TABLE IS USED TO SELECT THE CORRECT PLOTTER COMMANDS. THE ADDRESS TABLE, IN TURN, POINTS TO A PAIR OF COMPUTER WORDS. ONE WORD CONTAINS A NUMBER WHICH INDICATES THE NUMBER OF TIMES THE OTHER WORD (THE PLOTTER COMMAND) IS TO BE EXECUTED.

THE PATTERN PLOTTED IN THIS FUNCTION TEST CONTAINS TWO ADJACENT OCTAGONS, WHOSE SIDES ARE ONE AND ONE HALF INCHES IN LENGTH. OCTAGON NO. 1 (LEFTMOST OCTAGON) IS PLOTTED IN A CLOCKWISE DIRECTION. OCTAGON NO. 2 (RIGHTMOST OCTAGON) IS PLOTTED IN A COUNTER CLOCKWISE DIRECTION.

THIS ROUTINE IS DESIGNED SO THAT, IF A PEN UP COMMAND IS NOT EXECUTED AS IT SHOULD BE, A LINE WILL BE DRAWN IN THE INNER PORTION OF THE OCTAGON. IF A PEN DOWN COMMAND IS NOT EXECUTED, A SIDE OF THE OCTAGON WILL BE MISSING. FIGURE 1 SHOWS AN EXAMPLE OF THE OUTPUT OF THIS ROUTINE.

5.2 ROUTINE 2 REGISTRATION TEST

THE FUNCTION OF THIS ROUTINE IS TO DETERMINE IF ANY ADJUSTMENTS ARE NEEDED IN THE PEN OR DRUM MOVEMENT MECHANISMS. FIGURE 2 SHOWS THE PATTERN GENERATED BY THIS ROUTINE. IF ANY OF THE LINES FAIL TO INTERSECT, SOME MECHANICAL ADJUSTMENT OF THE PLOTTER MAY BE NEEDED.

5.3 ROUTINE 3 SWING TEST

THE PURPOSE OF THIS ROUTINE IS TO TEST THE ABILITY OF THE PLOTTER TO PLOT LONG LINE SEGMENTS IN VARIOUS DIRECTIONS. THE PATTERN GENERATED BY THIS ROUTINE IS SO DESIGNED, THAT IF PLOTTER COMMANDS ARE NOT EXECUTED OR EXTRA COMMANDS ARE EXECUTED, THE CORNERS OF THE PATTERN WILL NOT JOIN. THIS TEST WILL ALSO SHOW UP ANY MALADJUSTMENT IN THE PEN OR DRUM MECHANISM.

THE METHOD USED IN GENERATING THE PATTERN IS AS FOLLOWS.

A. THE LEFT AND TOP SIDES OF A SERIES OF SQUARES ARE DRAWN AS A CONTINUOUS LINE, VARYING IN SIZE FROM 10 TO 2 INCHES.

B. THE RIGHT AND BOTTOM SIDES OF THE SERIES OF SQUARES ARE DRAWN IN ONE QUARTER INCH LINE SEGMENTS, JOINED TOGETHER, AND TOTALING THE LENGTH OF THE LEFT AND TOP SIDES.

C. ON COMPLETING THE PLOTTING OF THE SQUARES, LINES ARE DRAWN (BOTH SEGMENTED AND CONTINEOUS) THRU THE CORNERS OF THE SQUARES. ALL OF THESE DIAGONAL LINES SHOULD INTERSECT THE CORNERS OF THE SQUARES PERFECTLY.

FIGURE 3 SHOWS THE PLOTTER PATTERN GENERATED BY THIS ROUTINE.

5.4 ROUTINE 4 STRESS TEST (WINDMILL PATTERN)

THE PURPOSE OF THIS ROUTINE IS TO EXERCISE ALL OF THE MECHANICAL FUNCTIONS OF THE PLOTTER. THIS OBJECTIVE IS ACCOMPLISHED BY PLOTTING A PATTERN OF TRIANGLES, ROUGHLY RESEMBELING A WINDMILL. EACH SIDE OF THE TRIANGLE CONSISTS OF A SERIES OF SHORT SAWTOOTH-LIKE SEGMENTS, WHICH TESTS THE ABILITY OF THE PLOTTER TO PLOT SHORT LINE SEGMENTS WITH ABRUPT CHANGES IN DIRECTION. A SET OF FIVE TRIANGLES IS PLOTTED, THE AXIS IS THEN ROTATED 90 DEGREES AND FIVE MORE TRIANGLES ARE PLOTTED IN THE SAME MANNER UNTIL, FINALLY, FOUR SETS OF TRIANGLES HAVE BEEN PLOTTED. WHEN THE TRIANGLES HAVE BEEN PLOTTED, A LINE IS DRAWN THRU THE INNERMOST POINTS OF THE TRIANGLES. THE RESULTANT PATTERN THEN APPEARS AS A WINDMILL WITH A DIAMOND SHAPED PATTERN CONNECTING THE INNER POINTS OF THE TRIANGLES. THE DIAMOND DESIGN SHOULD INTERSECT ALL OF THE INNER POINTS OF THE TRIANGLES IF THE PLOTTER IS ADJUSTED CORRECTLY. FIGURE 4 SHOWS THE PLOTTER PATTERN GENERATED BY THE ROUTINE.

5.5 ROUTINE 5 (MANUALLY SELECTED PLOTTER COMMANDS)

TO USE ROUTINE 5 IT MUST BE SELECTED IN FUNCTION 01.
THE PURPOSE OF THIS ROUTINE IS TO PROVIDE TO THE FIELD ENGINEER THE CAPABILITY OF EXECUTING ANY PLOTTER COMMAND HE WISHES TO ON THE PLOTTER, BY MEANS OF ENTERING THE PLOTTER COMMAND IN THE CONSOLE BIT SWITCHES. THE PLOTTER WILL CONTINUE TO EXECUTE THE COMMAND UNTIL IT RECEIVES ANOTHER COMMAND FROM THE OPERATORS CONSOLE, OR A COMMAND OF ALL ZEROS IS RECEIVED WHICH WILL END THIS ROUTINE. THE ROUTINE MAY ALSO BE DESELECTED BY SELECTING ANOTHER ROUTINE. FOR COMMAND SETTING REFER TO TABLE 2 SECTION 3.3.3.

5.6 ROUTINE 6 END ROUTINE

THIS ROUTINE MAY BE SELECTED TO TERMINATE THE PROGRAM AND WILL RETURN CONTROL TO THE DIAGNOSTIC MONITOR END ROUTINE.

6 APPENDIX

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.

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).

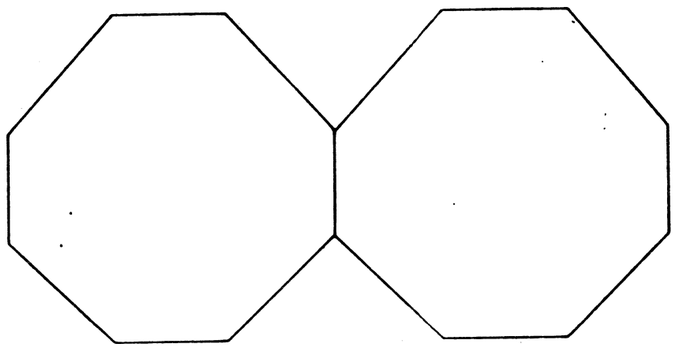
Field layout: PROGRAM I.D. (cols 2–5); CARD SEQUENCE NUMBER (cols 7–10); NUMBER OF EDIT ENTRIES — ENTER EITHER A "1" OR A "2" (cols 12–15); 1627-1 DDEF ENTRY 1: INTERRUPT LEVEL (HEX) (cols 17–18), ILSW BIT (HEX) (col 19), CHANNEL (OR F) (col 20); 1627-2 DDEF ENTRY 2: INTERRUPT LEVEL (HEX) (cols 22–23), ILSW BIT (HEX) (col 24), CHANNEL (OR F) (col 25). Shaded (blank) columns: 6, 11, 16, 21, 26, 31, 36, 41, 46, 51, 56, 61, 66, 71.

COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
CARD 0	E	0	5	0	0		E	D	0	0		0	0	0			0	4	5	F					F	
END	E	0	5	0	0		F	F	F	F																

CARD 0 CONTAINS THE DDEF'S FOR THE 1627 PLOTTERS. IF THIS SYSTEM HAS ONLY ONE 1627, THEN ONLY ONE ENTRY IS REQUIRED IN THIS CARD.

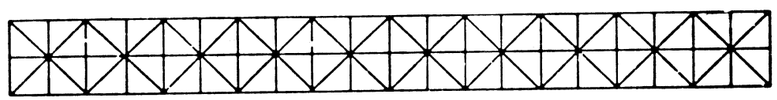
CARD END IS THE "END EDIT CARD". PUNCH EXACTLY AS IS SHOWN.

FIGURE 1 PATTERN FOR PEN UP/PEN DOWN TEST



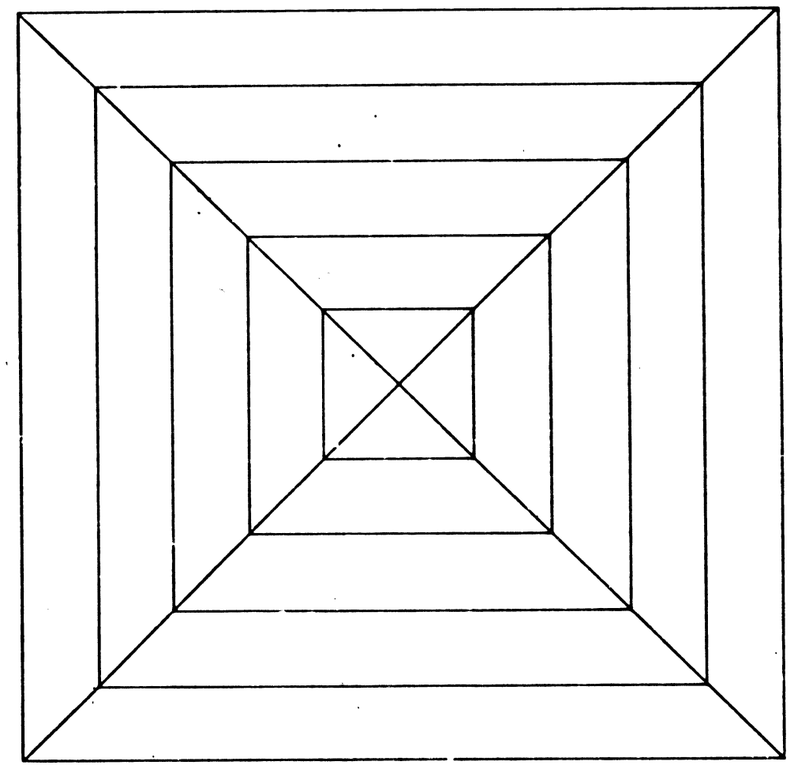
SCALE 3/4 = 1

FIGURE 2 PATTERN FOR REGISTRATION TEST



SCALE: 3/4 = 1

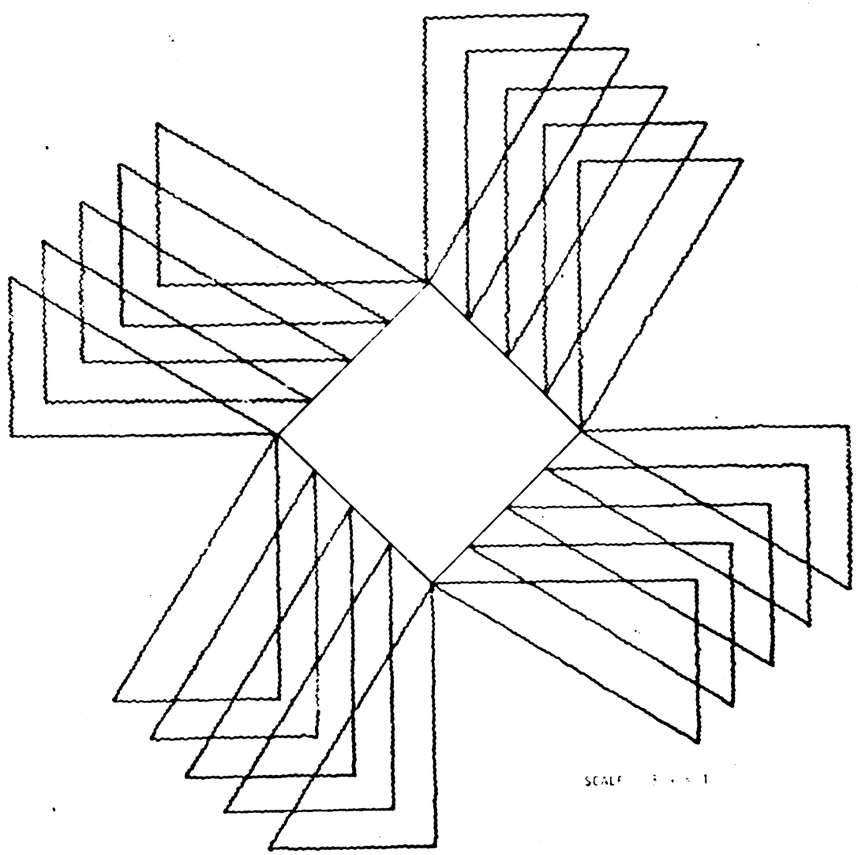
FIGURE 3 SWING TEST - PATTERN



SCALE: 3/4 = 1

FIGURE 4

STRESS TEST - WINDMILL PATTERN



SCALE

```
0000                    ORG    *+2047                                    80500000
012C                BEGIN EQU  300                                       80500010
012D                START EQU  BEGIN+1                                   80500020
012E                END   EQU  START+1                                   80500030
012F                LOG   EQU  END+1                                     80500040
0130                ERROR EQU  LOG+1                                     80500050
0131                REQDV EQU  ERROR+1                                   80500060
0132                RELDV EQU  REQDV+1                                   80500070
0133                HALT  EQU  RELDV+1                                   80500080
                    *                                                    80500090
                    *                                                    80500100
                    *****          PROGRAM STARTER TABLE *********       80500110
                    *                                                    80500120
                    *                                                    80500130
07FF 0  0500        PID   DC     /0500     PROG IDENTIFICATION           80500140
0800 0  0000        RID   DC     /0000     ROUTINE NUMBER                80500150
0801 0  0000        RAD   DC     /0000     ROUTINE ADDRESS               80500160
0802 0  0000        SW0   DC     /0000     BIT SWITCH FUNC 0             80500170
0803 0  0000        SW1   DC     /0000     BIT SWITCH FUNC 1             80500180
0804 0  0000        SW2   DC     /0000     BIT SWITCH FUNC 2             80500190
0805 0  0000        SW3   DC     /0000     BIT SWITCH FUNC 3             80500200
0806 1  0829        ILP   DC     RTO       INITIALIZATION ADDR           80500210
0807 1  0829        LPA   DC     RTO       LOOP PROG ADDR                80500220
0808 1  09CC        EPA   DC     RTOVR     END PROG ADDR                 80500230
0809 0  0000        MLSCF DC     /0000     1ST MLSCF NORMAL              80500240
080A 0  0000              DC     /0000     2ND MLSCF BUSY                80500250
080B 0  0000              DC     /0000     3RD MLSCF INTR CK             80500260
080C 0  FFFF        TERM  DC     /FFFF     TERMINATOR                    80500270
080D 1  08FD              DC     PEND      PROGRAM END                   80500280
080E 0  0000              DC     /0000                                   80500290
080F 0  0000              DC     /0000                                   80500300
0810 0  0000              DC     /0000                                   80500310
0811 0  0000              DC     /0000                                   80500320
0812 0  0000              DC     /0000                                   80500330
                    *                                                    80500340
0813 0  0000        EDIT1 DC     /0000     PLOTTER 1                     80500350
0814 0  0000        EDIT2 DC     /0000     PLOTTER 2                     80500360
                    *                                                    80500370
0815 0  0000        EDIT  DC     /0000     INTR AND CHAN USED            80500380
                    *                                                    80500390
                    *                                                    80500400
                    *****          ROUTINE INTERRUPT **************      80500410
                    *                                                    80500420
                    *                                                    80500430
0816 0  0000        PLDVA DC     /0000     AREA CODE AND MOD             80500440
                    *                                                    80500450
0817 0  0000        RECEV DC     /0000     RETURN ADDR          SE       80500460
0818 01 0C000A92          XIO  L  SENSE     SENSE DSW                     80500470
081A 0  1000        KEEP1 NOP              USE FOR TRAP                  80500480
081B 01 F4000A70          EOR  L  K8000     REMOVE SERVICE REQST          80500490
081D 01 D4000ADA          STO  L  ERBIT     SAVE DSW ERROR BITS           80500500
081F 01 67000A2D    RECSW LDX  L3 CONT      GET MLSCF                     80500510
0821 0  6BE7              STX   3 MLSCF     SET MLSCF                     80500520
0822 01 4C800817          BSC  I  RECEV     RETURN TO MONITOR    SX       80500530
                    *                                                    80500540
                    *                                                    80500550
                    *************  DSW TABLE  ***************************80500560
                    *                                                    80500570
                    *                                                    80500580
0824 00 4480012C    PLBGN BSI  I  BEGIN     CALL TO MONITOR               80500590
0826 1  07FF              DC     PID                                     80500600
0827 1  0817              DC     RECEV     INTERRUPT ENTRY ADDR          80500610
0828 0  FFFF              DC     /FFFF                                   80500620
                    *                                                    80500630
                    ************************************************   80500640
                    *                                                    80500650
                    *****          ROUTINE 0- INITIALIZATION *****       80500660
                    *                                                    80500670
```



```
                    *                                                    80500680
0829 0  0000        RTO   DC     /0000     RETURN ADDR          E       80500690
                    *                                                    80500700
082A 0  C0EA              LD     EDIT                                    80500705
082B 01 442809CC          BSI  L RTOVR,+Z  RELEASE DEVICE MINE           80500706
082D 0  C0D6              LD     SW2                                     80500710
082E 0  180E              SRA    14                                      80500720
082F 01 4C040833          BSC  L NBTWO,E   BCH ON BIT 1                  80500730
0831 0  C0E1              LD     EDIT1     PLOTTER 1 DDEF                80500740
0832 0  7001              MDX    XX                                      80500750
0833 0  C0E0        NBTWO LD     EDIT2     PLOTTER 2 DDEF                80500760
0834 0  D0E0        XX    STO    EDIT      DDEF CONTROLS                 80500770
                    *                                                    80500780
0835 00 44800131    LABEL BSI  I  REQDV     REQUEST DEVICE       SC       80500790
0837 1  0849              DC     STDBY     BUSY ADDR                     80500800
0838 1  0815              DC     EDIT      INTR AND CHAN                 80500810
0839 1  0816              DC     PLDVA     AREA CODE AND MOD             80500820
083A 1  080C              DC     TERM      TERMINATOR                    80500830
                    *                                                    80500840
083B 0  6205              LDX    2 5                                     80500850
083C 01 C6000A90    BUILD LD   L2 SENT      LOAD FUNCTION                 80500860
083E 0  E014              AND    K0701                                   80500865
083F 0  E8D6              OR     PLDVA     AREA CODE                     80500870
0840 01 D6000A90          STO  L2 SENT      SET IN I/O COMMAND            80500880
0842 0  72FE              MDX    2 -2                                    80500890
0843 0  70F8              MDX      BUILD                                 80500900
                    *                                                    80500910
0844 01 66000B4E          LDX  L2 RUNIT     LD XR2 WITH RE-ENTRY          80500920
0846 0  6AC2              STX    2 MLSCF    SET MLSCF                     80500930
0847 01 4C800829          BSC  I  RTO       RETURN TO MONITOR    X        80500940
                    *                                                    80500950
0849 01 65000835    STDBY LDX  L1 LABEL     GET BUSY ADDR                 80500960
084B 0  69BD              STX    1 MLSCF    SET MLSCF                     80500970
084C 00 4C800120          BSC  I  START     RETURN TO MONITOR    X        80500980
                    *                                                    80500990
                    *                                                    80501000
084E 01 440009D3    RUNIT BSI  L  BSWCK     CHECK BIT SWITCH     SC       80501010
0850 0  6201              LDX    2 1        SET ROUTINE 1                 80501020
0851 01 4C0009DF          BSC  L  RTSET     SET ROUTINE                   80501030
                    *                                                    80501040
0853 0  0701        K0701 DC     /0701     REMOVE AREA CODE MSK          80501045
                    *                                                    80501050
                    *****          ROUTINE 1- OCTAGON PEN UP-DOWN        80501060
                    *                                                    80501070
0854 01 44000A38    RT1   BSI  L  READY     CHECK STATUS         ESC      80501080
                    *                                                    80501090
0856 01 C4000A6F          LD   L  K0150     CONSTANT OF 150               80501100
0858 0  63F1              LDX    3 -15                                   80501110
0859 01 D7000A83    BOOT  STO    L3 NN+15   STORE MOVE COUNT              80501120
085B 0  7302              MDX    3 2                                     80501130
085C 0  70FC              MDX      BOOT                                  80501140
                    *                                                    80501150
085D 01 65000A9A          LDX  L1 RT1ST     START COMMAND ADDR            80501160
085F 01 6D000A71          STX  L1 LOOK      POINTS TO COMMAND             80501170
0861 01 44000A0C          BSI  L  DISP      USE DISPATCH ROUTINE SC       80501180
                    *                                                    80501190
0863 01 440009D3          BSI  L  BSWCK     CHECK BIT SWITCH     SC       80501200
0865 0  6202              LDX    2 2        NEW ROUTINE NUMBER            80501210
0866 01 4C0009DF          BSC  L  RTSET                          X        80501220
                    *                                                    80501230
                    *                                                    80501240
                    *****          ROUTINE 2- REGISTRATION TEST **       80501250
                    *                                                    80501260
                    *                                                    80501270
0868 01 44000A38    RT2   BSI  L  READY     CHECK STATUS         ESC      80501280
                    *                                                    80501290
086A 00 67000064          LDX  L3 100       SET UP COUNT                  80501300
086C 01 6F000A82          STX  L3 NN                                      80501310
```

```
086E 01 6F000A80          STX  L3 SW                                    80501320
0870 01 6F000A74          STX  L3 NN                                    80501330
0872 01 6F000A76          STX  L3 SS                                    80501340
0874 01 6F000A7C          STX  L3 NE                                    80501350
0876 01 6F000A7E          STX  L3 SE                                    80501360
0878 00 67000032          LDX  L3 50                                    80501370
087A 01 6F000A78          STX  L3 EE                                    80501380
087C 01 6F000A7A          STX  L3 WW                                    80501390
                     *                                                  80501400
087E 01 65000AEC          LDX  L1 RT2ST     START COMMAND ADDR          80501410
0880 01 6D000A71          STX  L1 LOOK      POINTS TO COMMAND           80501420
0882 0  6305              LDX   3 5                                     80501430
0883 01 6F000A6B          STX  L3 EXTRA     LOOP COUNT                  80501440
0885 01 44000A0C          BSI  L  DISP      USE DISPATCH ROUTINE  SC    80501450
                     *                                                  80501460
0887 01 74010A71          MDX  L  LOOK,1                                80501470
0889 00 670003E8          LDX  L3 1000      CHANGE COUNT                80501480
088B 01 6F000A78          STX  L3 EE                                    80501490
                     *                                                  80501500
088D 01 44000A0C REG01    BSI  L  DISP      USE DISPATCH ROUTINE  SC    80501510
088F 01 74FE0A71          MDX  L  LOOK,-2                               80501520
0891 01 74FF0A6B          MDX  L  EXTRA,-1  REDUCE LOOP COUNT           80501530
0893 0  70F9              MDX       REG01                               80501540
                     *                                                  80501550
0894 01 74030A71          MDX  L  LOOK,3                                80501560
0896 0  6305              LDX   3 5                                     80501570
0897 01 6F000A6B          STX  L3 EXTRA     LOOP COUNT                  80501580
                     *                                                  80501590
0899 01 44000A0C REG02    BSI  L  DISP      USE DISPATCH ROUTINE  SC    80501600
089B 01 74FE0A71          MDX  L  LOOK,-2                               80501610
089D 01 74FF0A6B          MDX  L  EXTRA,-1                              80501620
089F 0  70F9              MDX       REG02                               80501630
                     *                                                  80501640
08A0 0  630A              LDX   3 10                                    80501650
08A1 01 6F000A6B          STX  L3 EXTRA                                 80501660
08A3 01 74030A71          MDX  L  LOOK,3                                80501670
                     *                                                  80501680
08A5 01 44000A0C REG03    BSI  L  DISP      USE DISPATCH ROUTINE  SC    80501690
08A7 01 74F80A71          MDX  L  LOOK,-8                               80501700
08A9 01 74FF0A6B          MDX  L  EXTRA,-1                              80501710
08AB 0  70F9              MDX       REG03                               80501720
                     *                                                  80501730
08AC 01 74090A71          MDX  L  LOOK,9                                80501740
08AE 0  6332              LDX   3 50                                    80501750
08AF 01 6F000A76          STX  L3 SS                                    80501760
08B1 00 670003E8          LDX  L3 1000                                  80501770
08B3 01 6F000A7A          STX  L3 WW                                    80501780
08B5 01 44000A0C          BSI  L  DISP      USE DISPATCH ROUTINE  SC    80501790
                     *                                                  80501800
08B7 01 440009D3          BSI  L  BSWCK     CHECK BIT SWITCH      SC    80501810
08B9 0  6203              LDX   2 3                                     80501820
08BA 01 4C0009DF          BSC  L  RTSET                           X     80501830
                     *                                                  80501840
                     *                                                  80501850
                     *****          ROUTINE 3- SWING TEST *********     80501860
                     *                                                  80501870
                     *                                                  80501880
08BC 01 44000A38 RT3      BSI  L  READY     CHECK STATUS          ESC   80501890
                     *                                                  80501900
08BE 0  6328              LDX   3 40                                    80501910
08BF 0  6B2C              STX   3 SWNG2+1                               80501920
08C0 00 670000C8          LDX  L3 200                                   80501930
08C2 01 6F000A74          STX  L3 NN                                    80501940
08C4 0  6364              LDX   3 100                                   80501950
08C5 01 6F000A7C          STX  L3 NE                                    80501960
08C7 0  6332              LDX   3 50                                    80501970
08C8 01 6F000A78          STX  L3 EE                                    80501980
                     *                                                  80501990
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08CA 01 65000B08          LDX  L1 RT3ST     START COMMAND ADDR          80502000
08CC 01 6D000A71          STX  L1 LOOK                                  80502010
08CE 01 44000A0C          BSI  L  DISP      USE DISPATCH ROUTINE  SC    80502020
                     *                                                  80502030
08D0 01 74010A71          MDX  L  LOOK,1                                80502040
08D2 00 670001F4          LDX  L3 500                                   80502050
08D4 01 6F000A82          STX  L3 NW                                    80502060
08D6 01 6F000A7E          STX  L3 SE                                    80502070
08D8 01 6F000A80          STX  L3 SW                                    80502080
08DA 0  6319              LDX   3 25                                    80502090
08DB 01 6F000A76          STX  L3 SS                                    80502100
08DD 01 6F000A7A          STX  L3 WW                                    80502110
08DF 00 670003E8          LDX  L3 1000                                  80502120
08E1 01 6F000A74          STX  L3 NN                                    80502130
08E3 01 6F000A78          STX  L3 EE                                    80502140
                     *                                                  80502150
08E5 0  6305              LDX   3 5                                     80502160
08E6 01 6F000A72          STX  L3 SQRCT     SQUARE COUNT                80502170
                     *                                                  80502180
08E8 0  6302         SWNG1 LDX   3 2                                     80502190
08E9 01 6F000A73          STX  L3 TRICT     SEGMENTED LINE COUNT        80502200
08EB 00 67000028     SWNG2 LDX  L3 40                                    80502210
08ED 01 6F000A6B          STX  L3 EXTRA     LOOP COUNT                  80502220
08EF 01 44000A0C     SWNG3 BSI  L  DISP      USE DISPATCH ROUTINE  SC    80502230
08F1 01 74FF0A71          MDX  L  LOOK,-1                               80502240
08F3 01 74FF0A6B          MDX  L  EXTRA,-1                              80502250
08F5 0  70F9              MDX       SWNG3   DO ANOTHER SEGMENT          80502260
                     *                                                  80502270
08F6 01 74020A71          MDX  L  LOOK,2                                80502280
08F8 01 74FF0A73          MDX  L  TRICT,-1                              80502290
08FA 0  70F0              MDX       SWNG2   DO ANOTHER LINE             80502300
                     *                                                  80502310
08FB 01 749C0A74          MDX  L  NN,-100                               80502320
08FD 01 749C0A74          MDX  L  NN,-100                               80502330
08FF 0  1000         KEEP2 NOP             MDX WILL HOP THIS           80502340
0900 01 749C0A78          MDX  L  EE,-100                               80502350
0902 01 749C0A78          MDX  L  EE,-100                               80502360
0904 0  1000         KEEP3 NOP             MDX WILL SKIP THIS          80502370
0905 01 74F808EC          MDX  L  SWNG2+1,-8 ADJ LINE LENGTH            80502380
0907 0  1000         KEEP4 NOP             MDX WILL SKIP THIS          80502390
0908 01 44000A0C          BSI  L  DISP      USE DISPATCH ROUTINE  SC    80502400
090A 01 74F70A71          MDX  L  LOOK,-9                               80502410
090C 01 74FF0A72          MDX  L  SQRCT,-1                              80502420
090E 0  70D9              MDX       SWNG1   DO ANOTHER SQUARE           80502430
                     *                                                  80502440
090F 01 740A0A71          MDX  L  LOOK,10                               80502450
0911 00 670003E8          LDX  L3 1000                                  80502460
0913 01 6F000A74          STX  L3 NN                                    80502470
0915 01 6F000A76          STX  L3 SS                                    80502480
                     *                                                  80502490
0917 01 44000A0C          BSI  L  DISP      USE DISPATCH ROUTINE  SC    80502500
0919 01 74010A71          MDX  L  LOOK,1                                80502510
091B 0  6302              LDX   3 2                                     80502520
091C 01 6F000A73          STX  L3 TRICT     SEGMENTED LINE COUNT        80502530
091E 0  6319              LDX   3 25                                    80502540
091F 01 6F000A82          STX  L3 NW                                    80502550
0921 01 6F000A7C          STX  L3 NE                                    80502560
                     *                                                  80502570
0923 0  6314         SWNG5 LDX   3 20                                    80502580
0924 01 6F000A6B          STX  L3 EXTRA     LOOP COUNT                  80502590
0926 01 44C00A0C     SWNG4 BSI  L  DISP      USE DISPATCH ROUTINE  SC    80502600
0928 01 74FF0A71          MDX  L  LOOK,-1                               80502610
092A 01 74FF0A6B          MDX  L  EXTRA,-1                              80502620
092C 0  70F9              MDX       SWNG4   DO ANOTHER LINE             80502630
                     *                                                  80502640
092D 01 74020A71          MDX  L  LOOK,2                                80502650
092F 01 74FF0A73          MDX  L  TRICT,-1                              80502660
0931 0  70F1              MDX       SWNG5   DO ANOTHER LINE             80502670
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                        *                                                                80502680
0932 01 440009D3        BSI  L  BSWCK      CHECK BIT SWITCHES     SC                     80502690
0934 0  6204            LDX  2  4          NEW ROUTINE NUMBER                            80502700
0935 01 4C0009DF        BSC  L  RTSET                             X                      80502710
                        *                                                                80502720
                        *                                                                80502730
                        *****       ROUTINE 4- WINDMILL DESIGN ****                      80502740
                        *                                                                80502750
                        *                                                                80502760
0937 01 44000A38  RT4   BSI  L  READY      CHECK STATUS           ESC                    80502770
                        *                                                                80502780
0939 00 67000164        LDX  L3 356        SET UP COUNT                                  80502790
093B 01 6F000A7C        STX  L3 NE                                                       80502800
093D 01 6F000A74        STX  L3 NN                                                       80502810
093F 01 67000B28        LDX  L3 RT4ST      START COMMAND ADDR                            80502820
0941 01 6F000A71        STX  L3 LOOK                                                     80502830
0943 01 44000A0C        BSI  L  DISP       USE DISPATCH ROUTINE   SC                     80502840
                        *                                                                80502850
0945 01 74010A71        MDX  L  LOOK,1                                                   80502860
0947 0  62F1            LDX  2  -15                                                      80502870
0948 C1 C4000A6D        LD   L  K0002      MOVE COUNT                                    80502880
094A 01 D6000A83  WMIL1 STO  L2 NN+15                                                    80502890
094C 0  7202            MDX  2  2                                                        80502900
094D 0  70FC            MDX     WMIL1                                                    80502910
                        *                                                                80502920
094E 01 67000A7C        LDX  L3 NE                                                       80502930
0950 0  4018            BSI     TCNTL      USE TRIANGLE CONTROL   SC                     80502940
                        *                                                                80502950
0951 01 67000A7E        LDX  L3 SE                                                       80502960
0953 0  4018            BSI     TCNTL      USE TRIANGLE CONTROL   SC                     80502970
                        *                                                                80502980
0954 01 67000A80        LDX  L3 SW                                                       80502990
0956 0  4015            BSI     TCNTL      USE TRIANGLE CONTROL   SC                     80503000
                        *                                                                80503010
0957 01 67000A82        LDX  L3 NW                                                       80503020
0959 0  4012            BSI     TCNTL      USE TRIANGLE CONTROL   SC                     80503030
                        *                                                                80503040
095A 00 670000C8        LDX  L3 200                                                      80503050
095C 01 6F000A82        STX  L3 NW                                                       80503060
095E 01 6F000A7C        STX  L3 NE                                                       80503070
0960 01 6F000A7E        STX  L3 SE                                                       80503080
0962 01 6F000A80        STX  L3 SW                                                       80503090
0964 01 74010A71        MDX  L  LOOK,1                                                   80503100
0966 01 44000A0C        BSI  L  DISP       DRAW SQUARE            SC                     80503110
                        *                                                                80503120
0968 0  406A            BSI     BSWCK      CHECK BIT SWITCH       SC                     80503130
0969 0  6206            LDX  2  6          NEW ROUTINE                                   80503140
096A 01 4C0009DF        BSC  L  RTSET                             X                      80503150
                        *                                                                80503160
                        *                                                                80503170
                        *****       TRIANGLE CONTROL **************                      80503180
                        *                                                                80503190
                        *                                                                80503200
096C 0  0000      TCNTL DC      /0000      RETURN ADDR            SE                     80503210
096D 0  6B28            STX  3  CHG1+1                            PR01                   80503220
096E 0  6B2E            STX  3  CHG2+1                            PR02                   80503230
096F 0  6B35            STX  3  CHG3+1                            PR03                   80503240
0970 0  6305            LDX  3  5                                                        80503250
0971 01 6F000A73        STX  L3 TRICT      TRIANGLE COUNT                                80503260
                        *                                                                80503270
0973 0  6356      RUN   LDX  3  86         START TRIANGLE                                80503280
0974 01 6F000A6B        STX  L3 EXTRA                                                    80503290
                        *                                                                80503300
0976 01 44000A0C  SIDE1 BSI  L  DISP       SIDE ONE               SC                     80503310
0978 01 74FE0A71        MDX  L  LOOK,-2                                                  80503320
097A 01 74FF0A6B        MDX  L  EXTRA,-1                                                 80503330
097C 0  70F9            MDX     SIDE1                                                    80503340
                        *                                                                80503350
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097D 01 74030A71        MDX  L  LOOK,3                                                   80503360
097F 0  632B            LDX  3  43                                                       80503370
0980 01 6F000A6B        STX  L3 EXTRA                                                    80503380
                        *                                                                80503390
0982 01 44000A0C  SIDE2 BSI  L  DISP       SIDE TWO               SC                     80503400
0984 01 74FE0A71        MDX  L  LOOK,-2                                                  80503410
0986 01 74FF0A6B        MDX  L  EXTRA,-1                                                 80503420
0988 0  70F9            MDX     SIDE2                                                    80503430
                        *                                                                80503440
0989 01 74030A71        MDX  L  LOOK,3                                                   80503450
098B 0  6356            LDX  3  86                                                       8050346C
098C 01 6F000A6B        STX  L3 EXTRA                                                    80503470
                        *                                                                80503480
098E 01 44000A0C  SIDE3 BSI  L  DISP       SIDE THREE             SC                     80503490
0990 01 74FD0A71        MDX  L  LOOK,-3                                                  80503500
0992 01 74FF0A6B        MDX  L  EXTRA,-1                                                 80503510
0994 0  70F9            MDX     SIDE3                                                    80503520
                        *                                                                80503530
0995 01 74300A7C  CHG1  MDX  L  NE,48                                                    PM01 80503540
0997 01 74C40A71        MDX  L  LOOK,4                                                   80503550
0999 01 74FF0A73        MDX  L  TRICT,-1       TRIANGLE COUNT                            80503560
099B 0  7006            MDX     TOP                                                      80503570
                        *                                                                80503580
099C 01 74D00A7C  CHG2  MDX  L  NE,-48                                                   PM02 80503590
099E 01 74030A71        MDX  L  LOOK,3                                                   80503600
09A0 01 4C80096C        BSC  I  TCNTL      RETURN TO PROG         SX                     80503610
                        *                                                                80503620
09A2 01 44000A0C  TOP   BSI  L  DISP       USE DISPATCH ROUTINE   SC                     80503630
09A4 01 74D00A7C  CHG3  MDX  L  NE,-48                                                   PM03 80503640
09A6 01 74F30A71        MDX  L  LOOK,-13                                                 80503650
09A8 0  70CA            MDX     RUN        DO ANOTHER TRIANGLE                           80503660
                        *                                                                80503670
                        *                                                                80503680
                        *****       ROUTINE 5- MANUAL CONTROL *****                      80503690
                        *                                                                80503700
                        *                                                                80503710
09A9 01 67000B6D  RT5   LDX  L3 RT5ST      START COMMAND ADDR     E                      80503720
09AB 01 6F000A71        STX  L3 LOOK       POINTS TO COMMAND                             80503730
09AD 01 C4000804        LD   L  SW2                                                      80503740
09AF 0  1002            SLA     2                                                        80503750
09B0 0  4820            BSC     Z                                                        80503760
09B1 0  7007            MDX     RT5A       BCH TO MANUAL CNTL                            80503770
09B2 0  4020            BSI     BSWCK      CHECK BIT SWITCH       SC                     80503780
09B3 01 670009A9        LDX  L3 RT5        PICK UP MLSCF ENTRY                           80503790
09B5 01 6F000809        STX  L3 MLSCF      SET MLSCF                                     80503800
09B7 00 4C80012D        BSC  I  START      LOOP THRU MONITOR      X                      80503810
                        *                                                                80503820
09B9 01 670009B9  RT5A  LDX  L3 RT5A       MODIFY RETURN ADDR                            80503830
09BB 01 6F000820        STX  L3 RECSW+1    FOR INTERRUPT RTNE.                           80503840
09BD 01 C4000804        LD   L  SW2        BIT SWITCH STORAGE                            80503850
09BF 0  1802            SRA     2                                                        80503860
09C0 0  100A            SLA     10                                                       80503870
09C1 01 D4000A97        STO  L  SBSW2      NEW COMMAND                                   80503880
09C3 01 44200A0C        BSI  L  DISP,Z     TEST FOR END OF RTNE   SC                     80503890
09C5 01 67000A2D        LDX  L3 CONT                                                     80503900
09C7 01 6F000820        STX  L3 RECSW+1    RESTORE RETURN ADDR.                          80503910
09C9 0  4009            BSI     BSWCK      CHECK BIT SWITCH       SC                     80503920
                        *                                                                80503930
                        *                                                                80503940
09CA 00 4C80012E  RTEND BSC  I  END        GO TO MONITOR          X                      80503950
                        *                                                                80503960
09CC 0  0000      RTOVR DC      /0000      RETURN ADDR            SE                     80503970
                        *                                                                80503980
09CD 00 44800132        BSI  I  RELDV      RELEASE DEVICE         SC                     80503990
09CF 1  0815            DC      EDIT                                                     80504000
09D0 1  080C            DC      TERM       TERMINATOR                                    80504010
09D1 01 4C8009CC        BSC  I  RTOVR      RETURN TO PROGRAM      Sx                     80504020
                        *                                                                80504030
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1627 FUNCTION TEST

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                        ********************************************          80504040
                        *                                          *          80504050
                        ******          COMMON SUB ROUTINES ***********          80504060
                        *                                                     80504070
                        *                                                     80504080
                        *****           ROUTINE BIT SWITCH CHECK ******          80504090
                        *                                                     80504100
09D3 0  0000            BSWCK DC        /0000       RETURN ADDRESS       SE  80504110
09D4 01 C4000803              LD    L   SW1         BIT SWITCH STORAGE       80504120
09D6 01 4C9809D3              BSC   I   BSWCK,+-    BCH ON ZERO          SX  80504130
09D8 01 E4000A6E              AND   L   K0007       SAVE ROUTINE NUMBER      80504140
09DA 01 D4000800              STO   L   RID         STORE ROUTINE NUMBER     80504150
09DC 01 66800800              LDX   I2  RID         LOAD XR 2 INDERCT        80504160
09DE 0  7002                  MDX       RERUN                                80504170
                        *                                                     80504180
09DF 01 6E000800        RTSET STX   L2  RID         STORE ROUTINE NUMBER     80504190
09E1 01 C60009E9        RERUN LD    L2  RTABL       GET ROUTINE ADDR AND     80504200
09E3 01 D4000809              STO   L   MLSCF       SET MLSCF                80504210
09E5 01 D4000801              STO   L   RAD         ROUTINE ADDR             80504220
09E7 00 4C80012D              BSC   I   START       RETURN TO MONITOR    SX  80504230
                        *                                                     80504240
09E9 0  0000            RTABL DC        /0000       ROUTINE TABLE            80504250
09EA 1  0854                  DC        RT1         PEN UP-DOWN OCTAGON      80504260
09EB 1  0868                  DC        RT2         REGISTRATION TEST        80504270
09EC 1  088C                  DC        RT3         SWING TEST               80504280
09ED 1  0937                  DC        RT4         WINDMILL TEST            80504290
09EE 1  09A9                  DC        RT5         MANUAL CONTROL           80504300
09EF 1  09CA                  DC        RTEND       ROUTINE END              80504310
                        *                                                     80504320
                        *                                                     80504330
                        *****           ROUTINE BUSY ******************          80504340
                        *                                                     80504350
                        *                                                     80504360
09F0 0  0000            BUSY  DC        /0000       RETURN ADDR          SE  80504370
09F1 01 CC000A8E              LDD   L   MBUSY       MSG- BUSY                80504380
09F3 0  4002                  BSI       ERR1        USE ERROR ROUTINE    SC  80504390
09F4 01 4C8009F0              BSC   I   BUSY          TURN TO PROGRAM    SX  80504400
                        *                                                     80504410
                        *                                                     80504420
                        *****           ROUTINE ERROR TYPE OUT ********          80504430
                        *                                                     80504440
                        *                                                     80504450
09F6 0  0000            ERR1  DC        /0000       RETURN ADDR          SE  80504460
                        *                                                     80504470
09F7 00 44800130        ERBSY BSI   I   ERROR       CALL MONITOR ERROR   SC  80504480
09F9 1  0A06                  DC        ERMSG       MESSAGE ADDR             80504490
09FA 1  09FF                  DC        REPT1       BUSY ADDR                80504500
09FB 1  09FF                  DC        REPT1       ERROR ADDR               80504510
                        *                                                     80504520
09FC 01 658009F6              LDX   I1  ERR1                                 80504530
09FE 0  7002                  MDX       OUT                                  80504540
                        *                                                     80504550
09FF 01 650009F7        REPT1 LDX   L1  ERBSY                                80504560
0A01 01 6D000809        OUT   STX   L1  MLSCF       SET MLSCF                80504570
0A03 00 4C80012D              BSC   I   START       RETURN TO MONITOR    SX  80504580
                        *                                                     80504590
0A06    0000                  BSS   E   0                                    80504600
0A06 0  0003            ERMSG DC        /0003       WORD COUNT               80504610
0A07 0  0000                  DC        /0000       HEX CONTROL              80504620
0A08 0  E003                  DC        /E003       MESSAGE NUMBER           80504630
0A09 0  B1EE                  DC        /B1EE       CODED MESSAGE            80504640
0A0A 0  0000            ERBIT DC        /0000       BITS IN ERROR            80504650
0A0B 0  0000            02BE  DC        /0000       CORRECT BITS             80504660
                        *                                                     80504670
                        *                                                     80504680
                        *****           ROUTINE DISPATCH ***************          80504690
                        *                                                     80504700
                        *                                                     80504710
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1627 FUNCTION TEST

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0A0C 0  0000            DISP  DC        /0000       RETURN ADDR          SE  80504720
0A0D 01 65800A71        NEXT  LDX   I1  LOOK        RESTORE XR 1             80504730
0A0F 0  6961                  STX   1   LOOK        SAVE XR 1                80504740
0A10 00 CD800000              LDD   I1  0           GET COUNT + DIRECTION     80504750
0A12 01 DC000A98              STD   L   COUNT                                80504760
                        *                                                     80504770
0A14 01 4C980A0C              BSC   I   DISP,+-     BCH ON ZERO          SX  80504780
0A16 0  4021                  BSI       READY       CHECK STATUS         SC  80504790
0A17 0  087C            PLOT  XIO       MARK        MOVE COMMAND             80504800
0A18 0  0877                  XIO       SENSE       SENSE DSW                80504810
0A19 0  D0F0                  STO       ERBIT       SAVE ERROR BITS          80504820
0A1A 0  F052                  EOR       K0002       CHECK BUSY               80504830
0A1B 01 4C180A1F              BSC   L   TIME,+-     BCH ON ZERO              80504840
0A1D 0  D0ED                  STO       D2BE        CORRECT DSW BITS         80504850
0A1E 0  40D7                  BSI       ERR1        USE ERROR ROUTINE    SC  80504860
                        *                                                     80504870
0A1F 00 65000700        TIME  LDX   L1  /0700       TIMING CONSTANT          80504880
0A21 0  6948                  STX   1   CONST                                80504890
0A22 01 65000A28        HOPY  LDX   L1  HOP         GET MLSCF                80504900
0A24 01 6D000808              STX   L1  MLSCF+2     SET MLSCF                80504910
0A26 00 4C80012D              BSC   I   START       RETURN TO MONITOR    SX  80504920
                        *                                                     80504930
0A28 01 74FF0A6A        HOP   MDX   L   CONST,-1    REDUCE TIMER         SE  80504940
0A2A 0  70F7                  MDX       HOPY                                 80504950
0A2B 0  C860                  LDD       MNINT       MSG- NO INTERRUPT        80504960
0A2C 0  4023                  BSI       TYPE        USE TYPE ROUTINE     SC  80504970
                        *                                                     80504980
0A2D 01 74FF0A98        CONT  MDX   L   COUNT,-1    REDUCE COUNT             80504990
0A2F 0  70E7                  MDX       PLOT                                 80505000
                        *                                                     80505010
0A30 01 74010A71              MDX   L   LOOK,1      INCREASE LOOK BY 1       80505020
0A32 0  70DA                  MDX       NEXT                                 80505030
                        *                                                     80505040
                        *                                                     80505050
                        *****           ROUTINE NOT READY **************          80505060
                        *                                                     80505070
                        *                                                     80505080
0A33 0  0000            NRDY  DC        /0000       RETURN ADDR          SE  80505090
0A34 0  C855                  LDD       MNRDY       MSG- NOT READY           80505100
0A35 0  401A                  BSI       TYPE        USE TYPE ROUTINE     SC  80505110
0A36 01 4C800A33              BSC   I   NRDY        RETURN TO PROGRAM    SX  80505120
                        *                                                     80505130
                        *                                                     80505140
                        *****           ROUTINE STATUS CHECK **********          80505150
                        *                                                     80505160
                        *                                                     80505170
0A38 0  0000            READY DC        /0000       RETURN ADDR          SE  80505180
0A39 0  0858                  XIO       SENSE       SENSE DSW  AND RESET     80505190
0A3A 01 4C980A38              BSC   I   READY,+-     BCH ON ZERO          SX  80505200
0A3C 0  D0CD                  STO       ERBIT       SAVE DSW                 80505210
0A3D 01 44040A33              BSI   L   NRDY,E       BCH IF BIT 15 ON     SC  80505220
0A3F 0  C0CA                  LD        ERBIT       GET ERROR DSW            80505230
0A40 0  1801                  SRA       1                                    80505240
0A41 01 440409F0              BSI   L   BUSY,E      BCH IF BIT 14 ON     SC  80505250
0A43 0  C0C6                  LD        ERBIT       GET ERROR DSW            80505260
0A44 0  1802                  SRA       2                                    80505270
0A45 01 442009F6              BSI   L   ERR1,Z      BCH ON BITS          SC  80505280
0A47 0  084A            NOT   XIO       SENSE       SENSE DSW  AND RESET     80505290
0A48 01 4C980A38              BSC   I   READY,+-     RETURN TO PROG ON 0  SX  80505300
0A4A 01 65000A47              LDX   L1  NOT         GET MLSCF                80505310
0A4C 01 6D000809              STX   L1  MLSCF       SET MLSCF                80505320
0A4E 00 4C80012D              BSC   I   START       RETURN TO MONITOR    SX  80505330
                        *                                                     80505340
                        *****           ROUTINE TYPE *******************          80505350
                        *                                                     80505360
0A50 0  0000            TYPE  DC        /0000       RETURN ADDR          SE  80505370
0A51 0  D816                  STD       MSG         MSG AND NUMBER           80505380
0A52 01 C4000802              LD    L   SW0         BIT SWITCH STORAGE       80505390
```

```
0A54 0  100C            SLA    12                                    80505400
0A55 01 4CA80A50        BSC  I TYPE,+Z   BCH ON BIT 13          SX  80505410
                        *                                            80505420
0A57 00 4480012F LOGAG  BSI  I LOG       CALL MONITOR LOG      SC  80505430
0A59 1  0A66            DC     LOGM      ADDR OF MSG                80505440
0A5A 1  0A5F            DC     LOGB      BUSY ADDR                  80505450
0A5B 0  0000            DC     /0000                                80505460
                        *                                            80505470
0A5C 01 65800A50        LDX  I1 TYPE     GET MLSCF                  80505480
0A5E 0  7002            MDX    OUT1                                  80505490
                        *                                            80505500
0A5F 01 65000A57 LOGB   LDX  L1 LOGAG                                80505510
0A61 01 6D00080A OUT1   STX  L1 MLSCF+1                              80505520
0A63 00 4C80012D        BSC  I START     RETURN TO MONITOR     SX  80505530
                        *                                            80505540
0A66    0000            BSS  E  0                                    80505550
0A66 0  0001 LOGM       DC     /0001     WORD COUNT                 80505560
0A67 0  0000            DC     /0000     HEX                        80505570
0A68 0  0000 MSG        DC     /0000     MESSAGE NUMBER             80505580
0A69 0  0000            DC     /0000                                80505590
                        *                                            80505600
                        ********************************************80505610
                        *                                            80505620
                        *****          STORAGE AREA ***************80505630
                        *                                            80505640
                        *                                            80505650
0A6A 0  0000 CONST      DC     /0000                                 80505660
0A6B 0  0000 EXTRA      DC     /0000                                 80505670
0A6C 0  0000 K0000      DC     /0000     ZERO CONSTANT               80505680
0A6D 0  0002 K0002      DC     /0002                                 80505690
0A6E 0  0007 K0007      DC     /0007                                 80505700
0A6F 0  0096 K0150      DC     150       CONSTANT                    80505710
0A70 0  8000 K8000      DC     /8000                                 80505720
0A71 0  0000 LOOK       DC     /0000     START OF STRING             80505730
0A72 0  0000 SQRCT      DC     /0000     SQUARE COUNT                80505740
0A73 0  0000 TRICT      DC     /0000     TRIANGLE COUNT              80505750
                        *                                            80505760
                        ********************************************80505770
                        *                                            80505780
                        *****          COMMAND AREA ***************80505790
                        *                                            80505800
                        *                                            80505810
0A74 0  0000 NN         DC     /0000     MOVE COUNT                  80505820
0A75 0  4000            DC     /4000     DIRECTION- NORTH            80505830
0A76 0  0000 SS         DC     /0000                                 80505840
0A77 0  2000            DC     /2000               - SOUTH           80505850
0A78 0  0000 EE         DC     /0000                                 80505860
0A79 0  1000            DC     /1000               - EAST            80505870
0A7A 0  0000 WW         DC     /0000                                 80505880
0A7B 0  0800            DC     /0800               - WEST            80505890
0A7C 0  0000 NE         DC     /0000                                 80505900
0A7D 0  5000            DC     /5000               - NORTHEAST       80505910
0A7E 0  0000 SE         DC     /0000                                 80505920
0A7F 0  3000            DC     /3000               - SOUTHEAST       80505930
0A80 0  0000 SW         DC     /0000                                 80505940
0A81 0  2800            DC     /2800               - SOUTHWEST       80505950
0A82 0  0000 NW         DC     /0000                                 80505960
0A83 0  4800            DC     /4800               - NORTHWEST       80505970
0A84 0  0001 PENUP      DC     /0001                                 80505980
0A85 0  0400            DC     /0400               - PEN UP          80505990
0A86 0  0001 PENDW      DC     /0001                                 80506000
0A87 0  8000            DC     /8000               - PEN DOWN        80506010
0A88 0  044C LEFT       DC     1100                                  80506020
0A89 0  0800            DC     /0800               - WEST            80506030
                        *                                            80506040
0A8A 0  C001 MNRDY      DC     /C001                                 80506050
0A8B 0  A1DE            DC     /A1DE     MSG- NOT READY              80506060
                        *                                            80506070
```



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                                                                     80506080
0A8C 0  E001 MNINT      DC     /E001                                 80506090
0A8D 0  1CED            DC     /1CED     MSG- NO INTERRUPT           80506100
0A8E 0  E002 MBUSY      DC     /E002                                 80506110
0A8F 0  AD00            DC     /AD00     MSG- BUSY                   80506120
                        *                                            80506130
0A90 0  0000 SENT       DC     /0000     SENSE DSW                   80506140
0A91 0  0700            DC     /0700                                 80506150
0A92 0  0000 SENSE      DC     /0000     SENSE DSW + RESET           80506160
0A93 0  0701            DC     /0701                                 80506170
0A94 1  0A99 MARK       DC     COMAD     DIRECTION COMMAND           80506180
0A95 0  0100            DC     /0100                                 80506190
                        *                                            80506200
0A96 0  1100 BSWCT      DC     /1100     CMD EXECUTE CNTR            80506210
0A97 0  0000 SBSW2      DC     /0000     MANUAL COMMAND STG          80506220
0A98 0  0000 COUNT      DC     /0000                                 80506230
0A99 0  0000 COMAD      DC     /0000                                 80506240
                        *                                            80506250
0A9A 1  0A84 RT1ST      DC     PENUP     RT 1 START                  80506260
0A9B 1  0A88            DC     LEFT                                  80506270
0A9C 1  0A7C            DC     NE                                    80506280
0A9D 1  0A86            DC     PENDW     START 1ST OCTAGON           80506290
0A9E 1  0A74            DC     NN        1ST SIDE                    80506300
0A9F 1  0A84            DC     PENUP                                 80506310
0AA0 1  0A78            DC     EE                                    80506320
0AA1 1  0A7C            DC     NE                                    80506330
0AA2 1  0A86            DC     PENDW                                 80506340
0AA3 1  0A7E            DC     SE        2ND SIDE                    80506350
0AA4 1  0A84            DC     PENUP                                 80506360
0AA5 1  0A80            DC     SW                                    80506370
0AA6 1  0A76            DC     SS                                    80506380
0AA7 1  0A86            DC     PENDW                                 80506390
0AA8 1  0A7A            DC     WW        3RD SIDE                    80506400
0AA9 1  0A84            DC     PENUP                                 80506410
0AAA 1  0A74            DC     NN                                    80506420
0AAB 1  0A82            DC     NW                                    80506430
0AAC 1  0A86            DC     PENDW                                 80506440
0AAD 1  0A7C            DC     NE        4TH SIDE                    80506450
0AAE 1  0A84            DC     PENUP                                 80506460
0AAF 1  0A7E            DC     SE                                    80506470
0AB0 1  0A78            DC     EE                                    80506480
0AB1 1  0A86            DC     PENDW                                 80506490
0AB2 1  0A76            DC     SS        5TH SIDE                    80506500
0AB3 1  0A84            DC     PENUP                                 80506510
0AB4 1  0A7A            DC     WW                                    80506520
0AB5 1  0A80            DC     SW                                    80506530
0AB6 1  0A86            DC     PENDW                                 80506540
0AB7 1  0A82            DC     NW        6TH SIDE                    80506550
0AB8 1  0A84            DC     PENUP                                 80506560
0AB9 1  0A7C            DC     NE                                    80506570
0ABA 1  0A74            DC     NN                                    80506580
0ABB 1  0A86            DC     PENDW                                 80506590
0ABC 1  0A78            DC     EE        7TH SIDE                    80506600
0ABD 1  0A84            DC     PENUP                                 80506610
0ABE 1  0A76            DC     SS                                    80506620
0ABF 1  0A7E            DC     SE                                    80506630
0AC0 1  0A86            DC     PENDW                                 80506640
0AC1 1  0A80            DC     SW        8TH SIDE                    80506650
0AC2 1  0A84            DC     PENUP                                 80506660
0AC3 1  0A78            DC     EE                                    80506670
0AC4 1  0A78            DC     EE                                    80506680
0AC5 1  0A86            DC     PENDW     START SECOND OCTAGON        80506690
0AC6 1  0A78            DC     EE        1ST SIDE                    80506700
0AC7 1  0A84            DC     PENUP                                 80506710
0AC8 1  0A74            DC     NN                                    80506720
0AC9 1  0A7C            DC     NE                                    80506730
0ACA 1  0A86            DC     PENDW                                 80506740
0ACB 1  0A82            DC     NW        2ND SIDE                    80506750
0ACC 1  0A84            DC     PENUP                                 80506760
```

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0ACD 1 0A80          DC    SW                              80506760
0ACE 1 0A7A          DC    WW                              80506770
0ACF 1 0A86          DC    PENDW                           80506780
0AD0 1 0A76          DC    SS          3RD SIDE            80506790
0AD1 1 0A84          DC    PENUP                           80506800
0AD2 1 0A78          DC    EE                              80506810
0AD3 1 0A7E          DC    SE                              80506820
0AD4 1 0A86          DC    PENDW                           80506830
0AD5 1 0A7C          DC    NE          4TH SIDE            80506840
0AD6 1 0A84          DC    PENUP                           80506850
0AD7 1 0A82          DC    NW                              80506860
0AD8 1 0A74          DC    NN                              80506870
0AD9 1 0A86          DC    PENDW                           80506880
0ADA 1 0A7A          DC    WW          5TH SIDE            80506890
0ADB 1 0A84          DC    PENUP                           80506900
0ADC 1 0A76          DC    SS                              80506910
0ADD 1 0A80          DC    SW                              80506920
0ADE 1 0A86          DC    PENDW                           80506930
0ADF 1 0A7E          DC    SE          6TH SIDE            80506940
0AE0 1 0A84          DC    PENUP                           80506950
0AE1 1 0A7C          DC    NE                              80506960
0AE2 1 0A78          DC    EE                              80506970
0AE3 1 0A86          DC    PENDW                           80506980
0AE4 1 0A74          DC    NN          7TH SIDE            80506990
0AE5 1 0A84          DC    PENUP                           80507000
0AE6 1 0A7A          DC    WW                              80507010
0AE7 1 0A82          DC    NW                              80507020
0AE8 1 0A86          DC    PENDW                           80507030
0AE9 1 0A80          DC    SW          8TH SIDE            80507040
0AEA 1 0A84          DC    PENUP                           80507050
0AEB 1 0A6C          DC    K0000       END OF ROUTINE      80507060
                     *                                     80507070
0AEC 1 0A84   RT2ST  DC    PENUP       RT 2 START          80507080
0AED 1 0A88          DC    LEFT                            80507090
0AEE 1 0A7C          DC    NE                              80507100
0AEF 1 0A74          DC    NN                              80507110
0AF0 1 0A7A          DC    WW                              80507120
0AF1 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507130
0AF2 1 0A86          DC    PENDW       START FIGURE        80507140
0AF3 1 0A78          DC    EE                              80507150
0AF4 1 0A82          DC    NW                              80507160
0AF5 1 0A80          DC    SW                              80507170
0AF6 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507180
0AF7 1 0A74          DC    NN                              80507190
0AF8 1 0A7E          DC    SE                              80507200
0AF9 1 0A7C          DC    NE                              80507210
0AFA 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507220
0AFB 1 0A76          DC    SS                              80507230
0AFC 1 0A84          DC    PENUP                           80507240
0AFD 1 0A7A          DC    WW                              80507250
0AFE 1 0A86          DC    PENDW                           80507260
0AFF 1 0A74          DC    NN                              80507270
0B00 1 0A84          DC    PENUP                           80507280
0B01 1 0A7A          DC    WW                              80507290
0B02 1 0A86          DC    PENDW                           80507300
0B03 1 0A6C          DC    K0000       RETUNR CNTL TO PROG 80507310
0B04 1 0A78          DC    EE                              80507320
0B05 1 0A84          DC    PENUP                           80507330
0B06 1 0A76          DC    SS                              80507340
0B07 1 0A86          DC    PENDW                           80507350
0B08 1 0A7A          DC    WW                              80507360
0B09 1 0A84          DC    PENUP                           80507370
0B0A 1 0A6C          DC    K0000       END OF ROUTINE      80507380
                     *                                     80507390
0B0B 1 0A84   RT3ST  DC    PENUP       RT 3 START          80507400
0B0C 1 0A88          DC    LEFT                            80507410
0B0D 1 0A78          DC    EE                              80507420
0B0E 1 0A74          DC    NN                              80507430
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0B0F 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507440
0B10 1 0A86          DC    PENDW       START SQUARE        80507450
0B11 1 0A74          DC    NN                              80507460
0B12 1 0A78          DC    EE                              80507470
0B13 1 0A76          DC    SS                              80507480
0B14 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507490
0B15 1 0A7A          DC    WW                              80507500
0B16 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507510
0B17 1 0A84          DC    PENUP                           80507520
0B18 1 0A7C          DC    NE                              80507530
0B19 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507540
0B1A 1 0A86          DC    PENDW                           80507550
0B1B 1 0A7E          DC    SE                              80507560
0B1C 1 0A84          DC    PENUP                           80507570
0B1D 1 0A74          DC    NN                              80507580
0B1E 1 0A86          DC    PENDW                           80507590
0B1F 1 0A80          DC    SW                              80507600
0B20 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507610
0B21 1 0A82          DC    NW                              80507620
0B22 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507630
0B23 1 0A84          DC    PENUP                           80507640
0B24 1 0A76          DC    SS                              80507650
0B25 1 0A86          DC    PENDW                           80507660
0B26 1 0A7C          DC    NE                              80507670
0B27 1 0A6C          DC    K0000       END OF ROUTINE      80507680
                     *                                     80507690
0B28 1 0A84   RT4ST  DC    PENUP       RT4 START           80507700
0B29 1 0A88          DC    LEFT                            80507710
0B2A 1 0A7C          DC    NE                              80507720
0B2B 1 0A74          DC    NN                              80507730
0B2C 1 0A74          DC    NN                              80507740
0B2D 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507750
0B2E 1 0A86          DC    PENDW                           80507760
0B2F 1 0A80          DC    SW          SIDE 1 TRI 1        80507770
0B30 1 0A82          DC    NW                              80507780
0B31 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507790
0B32 1 0A82          DC    NW          SIDE 2 TRI 1        80507800
0B33 1 0A7C          DC    NE                              80507810
0B34 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507820
0B35 1 0A74          DC    NN          SIDE 3 TRI 1        80507830
0B36 1 0A7E          DC    SE                              80507840
0B37 1 0A7E          DC    SE                              80507850
0B38 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507860
0B39 1 0A84          DC    PENUP       MOVE TO NEW LOCATION 80507870
0B3A 1 0A7C          DC    NE                              80507880
0B3B 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507890
0B3C 1 0A86          DC    PENDW                           80507900
0B3D 1 0A82          DC    NW          SIDE 1 TRI 2        80507910
0B3E 1 0A7C          DC    NE                              80507920
0B3F 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507930
0B40 1 0A7C          DC    NE          SIDE 2 TRI 2        80507940
0B41 1 0A7E          DC    SE                              80507950
0B42 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80507960
0B43 1 0A78          DC    EE          SIDE 3 TRI 2        80507970
0B44 1 0A80          DC    SW                              80507980
0B45 1 0A80          DC    SW                              80507990
0B46 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80508000
0B47 1 0A84          DC    PENUP       MOVE TO NEW LOCATION 80508010
0B48 1 0A7E          DC    SE                              80508020
0B49 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80508030
0B4A 1 0A86          DC    PENDW                           80508040
0B4B 1 0A7C          DC    NE          SIDE 1 TRI 3        80508050
0B4C 1 0A7E          DC    SE                              80508060
0B4D 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80508070
0B4E 1 0A7E          DC    SE          SIDE 2 TRI 3        80508080
0B4F 1 0A80          DC    SW                              80508090
0B50 1 0A6C          DC    K0000       RETURN CNTL TO PROG 80508100
0B51 1 0A76          DC    SS          SIDE 3 TRI 3        80508110
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0852 1  0A82            DC      NW                              80508120
0853 1  0A82            DC      NW                              80508130
0854 1  0A6C            DC      K0000       RETURN CNTL TO PROG 80508140
0855 1  0A84            DC      PENUP       MOVE TO NEW LOCATION80508150
0856 1  0A80            DC      SW                              80508160
0857 1  0A6C            DC      K0000       RETURN CNTL TO PROG 80508170
0858 1  0A86            DC      PENDW                           80508180
0859 1  0A7E            DC      SE          SIDE 1 TRI 4        80508190
085A 1  0A80            DC      SW                              80508200
085B 1  0A6C            DC      K0000       RETURN CNTL TO PROG 80508210
085C 1  0A80            DC      SW          SIDE 2 TRI 4        80508220
085D 1  0A82            DC      NW                              80508230
085E 1  0A6C            DC      K0000       RETURN CNTL TO PROG 80508240
085F 1  0A7A            DC      WW          SIDE 3 TRI 4        80508250
0860 1  0A7C            DC      NE                              80508260
0861 1  0A7C            DC      NE                              80508270
0862 1  0A6C            DC      K0000       RETURN CNTL TO PROG 80508280
0863 1  0A84            DC      PENUP       MOVE TO NEW LOCATION80508290
0864 1  0A82            DC      NW                              80508300
0865 1  0A6C            DC      K0000       RETURN CNTL TO PROG 80508310
0866 1  0A86            DC      PENDW       DRAW SQUARE         80508320
0867 1  0A7C            DC      NE                              80508330
0868 1  0A7E            DC      SE                              80508340
0869 1  0A80            DC      SW                              80508350
086A 1  0A82            DC      NW                              80508360
086B 1  0A84            DC      PENUP                           80508370
086C 1  0A6C            DC      K0000       END OF ROUTINE      80508380
                *                                               80508390
086D 1  0A96    RT5ST   DC      BSWCT       RT 5 START          80508400
086E 1  0A6C            DC      K0000       MANUAL CONTROL      80508410
                *                                               80508420
0870    0000            BSS   E 0                               80508430
0870                    ORG     PID+/03FE                       80508440
                *                                               80508450
                *       THIS AREA CAN BE USED FOR PATCH         80508460
                *                                               80508470
08FD 0  0000    PEND    DC      /0000                           80508480
                *                                               80508490
08FE    0824            END     PLBGN                           80508500
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CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
BEGIN	012C	07FF,0824
BOOT	0859	085C
BSWCK	09D3	084E,0863,08B7,0932,0968,09B2,09C9,09D6
BSWCT	0A96	086D
BUILD	083C	0843
BUSY	09F0	09F4,0A41
CHG1	0995	096D
CHG2	099C	096E
CHG3	09A4	096F
COMAD	0A99	0A94
CONST	0A6A	0A21,0A28
CONT	0A2D	081F,09C5
COUNT	0A98	0A22,0A2D
DISP	0A0C	0861,0A85,088D,0899,08A5,08B5,08CE,08EF,0908,0917, 0926,0943,0966,0976,0982,098E,09A2,09C3,0A14
EDIT	0815	082A,0834,0838,09CF
EDIT1	0813	0831
EDIT2	0814	0833
EE	0A78	087A,0888,08C8,08E3,0900,0902,0AA0,0AB0,0ABC,0AC3, 0AC4,0AC6,0AD2,0AE2,0AF3,0B04,0B0D,0B12,0B43
END	012E	07FF,09CA
EPA	0808	
ERBIT	0A0A	081D,0A19,0A3C,0A3F,0A43
ERBSY	09F7	09FF
ERMSG	0A06	09F9
ERROR	0130	07FF,09F7
ERR1	09F6	09F3,09FC,0A1E,0A45
EXTRA	0A6B	0883,0891,0897,089D,08A1,08A9,08ED,08F3,0924,092A, 0974,097A,0980,0986,098C,0992
HALT	0133	
HOP	0A28	0A22
HOPY	0A22	0A2A
ILP	0806	
KEEP1	081A	
KEEP2	08FF	
KEEP3	0904	
KEEP4	0907	
K0000	0A6C	0AE8,0AF1,0AF6,0AFA,0B03,0B0A,0B0F,0B14,0B16,0B19, 0B20,0B22,0B27,0B2D,0B31,0B34,0B38,0B3B,0B3F,0B42, 0B46,0B49,0B4D,0B50,0B54,0B57,0B5B,0B5E,0B62,0B65, 0B6C,0B6E
K0002	0A6D	0948,0A1A
K0007	0A6E	09D8
K0150	0A6F	0856
K0701	0853	083E
K8000	0A70	081B
LABEL	0835	0849
LEFT	0A88	0A9B,0AED,0B0C,0B29
LOG	012F	07FF,0A57
LOGAG	0A57	0A5F
LOGB	0A5F	0A5A
LOGM	0A66	0A59
LOOK	0A71	085F,0880,0887,088F,0894,089B,08A3,08A7,08AC,08CC, 08D0,08F1,08F6,090A,090F,0919,0928,092D,0941,0945, 0964,0978,097D,0984,0989,0990,0997,099E,09A6,09AB, 0A0D,0A0F,0A30
LPA	0807	
MARK	0A94	0A17
MBUSY	0A8E	09F1
MLSCF	0809	0821,0846,084B,0985,09E3,0A01,0A24,0A4C,0A61
MNINT	0A8C	0A2B
MNRDY	0A8A	0A34
MSG	0A68	0A51
NBTWO	0833	082F
NE	0A7C	0874,08C5,0921,093B,094E,095E,0995,099C,09A4,0A9C,

		0AA1,0AAD,0AB9,0AC9,0AD5,0AE1,0AEE,0AF9,0B18,0B25, 0B2A,0B33,0B3A,0B3E,0B40,0B4B,0B60,0B61,0B67
NEXT	0A0D	0A32
NN	0A74	0859,0870,08C2,08E1,08F8,08FD,0913,093D,094A,0A9E, 0AAA,0ABA,0AC8,0AD8,0AE4,0AEF,0AF7,0AFF,0B0E,0B11, 0B1D,0B2B,0B2C,0B35
NOT	0A47	0A4A
NRDY	0A33	0A36,0A3D
NW	0A82	086C,08D4,091F,0957,095C,0AAB,0AB7,0ACB,0AD7,0AE7, 0AF4,0B21,0B30,0B32,0B3D,0B52,0B53,0B5D,0B64,0B6A
OUT	0A01	09FE
OUT1	0A61	0A5E
O2BE	0A0B	0A1D
PEND	08FD	080D
PENDW	0A86	0A9D,0AA2,0AA7,0AAC,0AB1,0AB6,0ABB,0AC0,0AC5,0ACA, 0ACF,0AD4,0AD9,0ADE,0AE3,0AE8,0AF2,0AFE,0B02,0B07, 0B10,0B1A,0B1E,0B25,0B2E,0B3C,0B4A,0B58,0B66
PENUP	0A84	0A9A,0A9F,0AA4,0AA9,0AAE,0AB3,0AB8,0ABD,0AC2,0AC7, 0ACC,0AD1,0AD6,0ADB,0AE0,0AE5,0AEA,0AEC,0AFC,0B00, 0B05,0B09,0B0B,0B17,0B1C,0B23,0B28,0B39,0B47,0B55, 0B63,0B6B
PID	07FF	0826,0870
PLBGN	0824	08FE
PLDVA	0816	0839,083F
PLOT	0A17	0A2F
RAD	0801	09E5
READY	0A38	0854,0868,08BC,0937,0A16,0A3A,0A48
RECEV	0817	0822,0827
RECSW	081F	09BB,09C7
REGO1	088D	0893
REGO2	0899	089F
REGO3	08A5	08AB
RELDV	0132	07FF,09CD
REPT1	09FF	09FA,09FB
REQDV	0131	07FF,0835
REKUN	09E1	09DE
RID	0800	09DA,09DC,09DF
RTABL	09E9	09E1
RTEND	09CA	09EF
RTOVR	09CC	0808,082B,09D1
RTSET	09DF	0851,0866,08BA,0935,096A
RTO	0829	0806,0807,0847
RT1	0854	09EA
RT1ST	0A9A	085D
RT2	0868	09EB
RT2ST	0AEC	087E
RT3	08BC	09EC
RT3ST	0B0B	08CA
RT4	0937	09ED
RT4ST	0B28	093F
RT5	09A9	09B3,09EE
RT5A	09B9	09B1,09B9
RT5ST	0B6D	09A9
RUN	0973	09A8
RUNIT	084E	0844
SBSW2	0A97	09C1
SE	0A7E	0876,08D6,0951,0960,0AA3,0AAF,0ABF,0AD3,0ADF,0AF8, 0B16,0B36,0B37,0B41,0B48,0B4C,0B4E,0B59,0B68
SENSE	0A92	0818,0A39,0A47
SENT	0A90	083C,0840,0A18
SIDE1	0976	097C
SIDE2	0982	0988
SIDE3	098E	0994
SQRCT	0A72	08E6,090C
SS	0A76	0872,08AF,08DB,0915,0AA6,0AB2,0ABE,0AD0,0ADC,0AF8, 0B06,0B13,0B24,0B51
START	012D	07FF,084C,09B7,09E7,0A03,0A26,0A4E,0A63
STDBY	0849	0837

SW	0A80	086E,08D8,0954,0962,0AA5,0AB3,0AC1,0ACD,0ADD,0AE9, 0AF5,0B1F,0B2F,0B44,0B45,0B4F,0B56,0B5A,0B5C,0B69
SWNG1	08E8	090E
SWNG2	08EB	08BF,08FA,0905
SWNG3	08EF	08F5
SWNG4	0926	092C
SWNG5	0923	0931
SW0	0802	0A52
SW1	0803	09D4
SW2	0804	082D,09AD,09BD
SW3	0805	
TCNTL	096C	0950,0953,0956,0959,09A0
TERM	080C	083A,09D0
TIME	0A1F	0A1B
TOP	09A2	0998
TRICT	0A73	08E9,08F8,091C,092F,0971,0999
TYPE	0A50	0A2C,0A35,0A55,0A5C
WHILI	094A	094D
WW	0A7A	087C,08B3,08DD,0AA8,0AB4,0ACE,0ADA,0AE6,0AF0,0AFD, 0B01,0B08,0B15,0B5F
XX	0834	0832

TABLE OF CONTENTS

1. PURPOSE

THE 1053-1816 TEST IS DESIGNED TO CHECK THE OPERATING PERFORMANCE OF ALL PRINTERS ON THE SYSTEM IN OVERLAP MODE. UP TO 8 PRINTERS AND ONE KEYBOARD MAY BE RUN INDEPENDENTLY.

2. PREREQUISITES

PROGRAM PREREQUISITES

THIS PROGRAM MUST RUN UNDER CONTROL OF THE DIAGNOSTIC MONITOR. THE DIAGNOSTIC MONITRO PROGRAM USES 2,047 STORAGE WORDS, AND THIS PROGRAM USES 1,792 STORAGE WORDS.

3. OPERATING PROCEDURE

3.1 PROGRAM LOADING

STANDARD LOADING PROCEDURE AS DESCRIBED IN THE DIAGNOSTIC MONITOR USE PROCEDURE.

3.2 PROGRAM OPERATION

STANDARD MONITOR OPERATING PROCEDURES APPLY.
THESE PROCEDURES ARE SUMMARIZED HERE. SEE DM USE PROCEDURE FOR DETAILS.

1. CLEAR SOTRAGE
2. LOAD DIAGNOSTIC MONITOR
3. SELECT MODE OF EXECUTION
4. SELECT MONITOR CONTROL OPTIONS, IF DESIRED
5. SELECT PROGRAM OPTIONS, IF DESIRED, FROM--

   TABLE 0 FUNCTION SELECTION
   TABLE 1 ROUTINE SELECT FUNCTION
   TABLE 2 DEVICE SELECT FUNCTION
   TABLE 3 DATA ENTRY FUNCTION
   SET A TAB STOP 30 POSITIONS TO THE RIGHT OF THE LEFT MARGIN.

6. INSTRUCT MONITOR TO EXECUTE

TABLE 0 FUNCTION SELECTION

SENSE/PROGRAM 0 1 2 3 4 5 6 7	1. SET FUNCTION 01 IN SENSE/PROGRAM SWITCHES 0 AND 1. 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. 3. SET DESIRED FUNCTION IN DATA ENTRY SWITCHES 0 THRU 15. 4. PRESS CONSOLE INTERRUPT
0 0 0 0 0 1 1 0	

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
1	USE DELAY TO LATCH THE CYCLE CLUTCH

TABLE 1 ROUTINE SELECT FUNCTION

SENSE/PROGRAM 0 1 2 3 4 5 6 7	1. SET FUNCTION 01 IN SENSE/PROGRAM SWITCHES 0 AND 1. 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. 3. SET DESIRED ROUTINE NUMBER IN DATA ENTRY SWS. 0 THRU 15. 4. PRESS CONSOLE INTERRUPT.
0 1 0 0 0 2 2 0	

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION	
0 0 0	0....PRINT LAST KEYBOARD ENTRY	RTN 1
0 0 1	0....TAB AND CARRIER RETURN	RTN 2
0 0 1	1....UPPER DASE CHARACTERS	RTN 3
0 1 0	0....LOWER CASE CHARACTERS	RTN 4
0 1 0	1....REGISTRATION	RTN 5
0 1 1	0....BACKSPACE AND INDEX	RTN 6
0 1 1	1....END OF LINE CARRRIER RETURN	RTN 7
1 0 0	0....ROCK	RTN 8
1 0 0	1....ROLL	RTN 9
1 0 1	0....TWIST	RTN 10
1 0 1	1....PRINT SW 3 DATA	RTN 11
1 1 0	0....KEYBOARD ENTRY	RTN 12

NOTE. THE KEYBOARD TEST IS NORMALLY ENTERED BY DEPRESSING THE KEYBOARD REQUEST KEY. HOWEVER THE KEYBOARD TEST CAN NOT BE RUN ON PRINTER 0 WITHOUT RESERVING PRINTER 0 FOR EXCLUSIVE USE BY THIS PROGRAM BY SELECTING ROUTINE 12 (TABLE 1). SEE SECTION 5.3 .

TABLE 2 DEVICE SELECT FUNCTION

SENSE/PROGRAM 0 1 2 3 4 5 6 7	
1 0 0 0 0 1 1 0	1. SET FUNCTION 10 IN SENSE/PROGRAM SWITCHES 0 AND 1. 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. 3. IT IT IS DESIRED TO RUN ALL PRINTERS, NO ENTRY IS NEEDED. OTHERWISE, SELECT THE DESIRED PRINTERS. 4. PRESS CONSOLE INTERRUPT.

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
. 1	PRINTER 8
. . . . . 1 .	PRINTER 7
. . . . . 1 . .	PRINTER 6
. . . . . 1 . . .	PRINTER 5
. . . . 1	PRINTER 4
. . . 1	PRINTER 3
. . 1	PRINTER 2
. 1	PRINTER 1
1	PRINTER 0 (PRINTER THAT IS USED AS THE MONITOR LOG DEVICE. THIS HAS BEEN DEFINED IN THE 1053/1816 EDIT CARD)

TABLE 3 DATA ENTRY FUNCTION

SENSE/PROGRAM 0 1 2 3 4 5 6 7	
1 1 0 0 0 1 1 0	1. SET FUNCTION 11 IN SENSE/PROGRAM SWITCHES 0 AND 1. 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. 3. SET DESIRED PRINT DATA IN DATA ENTRY SWTICHES 0-15. 4. PRESS CONSOLE INTERRUPT. NOTE -- EACH ENTRY CONTAINS TWO CHARACTERS FOR OUTPUT. ROUTINE 11 MUST BE SPECIFIEC (TABLE 1) FOR THIS DATA TO BE PRINTED.

DATA ENTRY SWITCHESS 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
X X X X X X X X	1ST OUTPUT CHARACTER OR CONTROL WORD
X X X X X X X X	2ND OUTPUT CHARACTER OR CONTROL WORD

3.3 PROGRAM HALTS

THIS PROGRAM HAS NO HALTS.

3.4 PROGRAM TERMINATION

A. STANDARD MONITOR TERMINATION

B. PROGRAM CONROL FUNCTION

THE PROGRAM WILL TERMINATE IF NO EDIT INFORMATION HAS BEEN PROVIDED OR IF THE OPERATOR HAS CLEARED DEVICE SELECTION WHILE PROGRAM IS EXECUTING.

4. PRINTOUTS

4.1 STATUS MESSAGE

NONE

4.2 ERROR MESSAGES

```
                    PTR
PID  MID  RID  RAD  NO.  WAS  S/B
0600 E001 000X XXXX 000X XXXX 0000
          DSW ERROR ON CHECKING FOR READY

          THIS MESSAGE MAY COME OUT IN ERROR WHEN DESELECTING A NOT READY
          TYPEWRITER WHEN RUNNING MULTIPLE TYPEWRITERS.


0600 E002 000X XXXX 000X XXXX XXXX
          DSW ERROR IMMEDIATELY AFTER OUTPUT COMMAND.


0600 E003 000X XXXX 000X XXXX XXXX
          INTERRUPT DSW ERROR


0600 E004 000X XXXX 000X XXXX XXXX
          LOST PRINTER INTERRUPT.
          DSW AFTER LAST X10 WRITE COMMAND IS PRINTED.


0600 E005 000C XXXX 000X XXXX
          KEYCODE ENTRY ERROR.  AN ILLEGAL KEYBOARD CODE HAS BEEN DETECTED.


0600 E006 000C XXXX 000X XXXX 0200
          DSW ERROR ON PLACING KEYBOARD IN PROCEED STATUS


0600 E007 000C XXXX 000X XXXX 0000
          DSW ERROR AFTER READ KEYBOARD COMMAND


0600 E008 000C XXXX 000X XXXX 0100
          DSW ERROR ON READING INTO A STORAGE PROTECTED AREA.


                              1ST  2ND
0600 E009 000C XXXX 000X XXXX XXXX
          MULTIPLE KEYBOARD READ ERROR.
          THE CHARACTERS READ DO NOT COMPARE.
```

5. COMMENTS

THIS FUNCTION TEST IS DESIGNED TO CHECK THE PROPER OPERATION OF THE 1053-1816 STATUS INDICATORS. THE VARIOUS ROUTINES AID IN DETERMINING THE PROPER ADJUSTMENT OF THE PRINTER.

5.1 THE PRINTER TEST.

THE PRINTER TEST IS A SERIES OF STANDARD TESTS PERFORMED IN ORDER OF COMPLEXITY. EACH TEST HAS TWO LINES OF OUTPUT (THE FIRST IN BLACK AND THE SECOND IN RED). THE ONLY EXCEPTION IS THE REGSITRATION TEST WHICH HAS ONLY ONE LINE.

A. THE NORMALLY RUN ROUTINES ARE DONE SEQUENTIALLY AS FOLLOWS

1. PRINT LAST KEYBOARD ENTRY.
2. CARRIER RETURN AND TABULATE.
3. UPPER CASE CHARACTERS.
4. LOWER CASE CHARACTERS. (SHIFT SIDE OF ELEMENT).
5. REGISTRATION

   THIS TEST PRINTS A BLACK '+' ENCLOSED BY A RED 'O'. IT CHECKS THE BACKSPACE FUNCTION AND THE ALIGNMENT OF THE PRINT.

6. BACKSPACE, INDEX.

   CHECKS TABULATE, BACKSPACE, AND LINE FEED FUNCTIONS.

7. END OF LINE CARRIER RETURN

   CHECKS TO SEE THAT THE END OF LINE CARRIER RETURN WORKS PROPERLY.

8. ROCK

   TESTS THE TILT MECHANISM BY TYPING CHARACTERS LOCATED ONE AFTER ANOTHER IN VERTICAL COLUMNS ON THE PRINT HEAD.

9. ROLL

   TESTS THE ROTATE MECHANISM BY SELECTING CHARACTERS ONE AFTER ANOTHER IN HORIZONTAL BANDS AROUND THE PRINT HEAD.

10. TWIST

    TESTS THE COMBINED ROTATE AND TILT MECHANISM BY CAUSING A MAXIMUM ROTATION AND TILT BETWEEN CHARACTERS.

B. ROUTINES AVAILABE FOR EXECUTION ON AN OPTIONAL BASIS FOLLOW,

ROUTINE 11 -- PRINT SW 3 DATA (TABLE 3)

TWO CHARACTERS MAY BE ENTERED VIA THE BIT SWITCHES ON FUNCTION LEVEL 11 (TABLE 3). THE DATA IS PRINTED ALTERNATELY TO ENTER THIS MODE, ROUTINE 11 MUST BE SPECIFIED (TABLE 1).

5.2 THE KEYBOARD TEST

THE KEYBOARD TEST IS ENTERED BY DEPRESSING THE KEYBOARD REQUEST KEY ANY TIME WHILE THE PRINTER TEST IS RUNNING THAT PRINTER.

****
*
* NOTE
*
* ONLY IF PRINTER 0 IS AN 1816 AND ITS KEYBOARD IS TO BE TESTED, THEN
* ROUTINE 12 MUST BE SPECIFIED BEFORE DEPRESSING KEYBOARD REQUEST.
* DEPRESSING EOF WHILE IN PROCEED STATUS WILL CAUSE THE PRINTER TO RETURN
* TO ROUTINE 1 AND PRINT THE KEYBOARD ENTRY. TO REENTER THE KEYBOARD TEST,
* THE OPTION MUST AGAIN BE SET. (SEE SECTION 5.3).
*
****

AT THIS TIME THE OPERATOR MAY ENTER ANY NUMBER OF CHARACTERS. EACH CHARACTER ENTERED IS PRINTED AS IT IS KEYED IN. WHEN THE EOF KEY IS DEPRESSED, THE FIRST 48 CHARACTERS ENTERED WILL BE REPRINTED WHEN THE PROGRAM RESTARTS THE PRINTER TEST. THOSE CHARACTERS LAST KEYED I ARE NOW INCLUDED AS ROUTINE 1 OF THE STANDARD PRINTER TESTS.

ALL KEYBOARD KEYS RETAIN THEIR NORMAL USE EXCEPT,

KEY	FUNCTION
EOF	END TRANSMISSION OF DATA, END KEYBOARD ROUTINE
ERASE FIELD	THE NEXT CHARACTER (IF ALPHA) WILL BE IN LOWER CASE.
0-2-8	LINE FEED

5.3 ROUTINE 12 OPTION

THIS OPTION RESERVES EXCLUSIVE USE OF PRINTER 0 TO THIS PROGRAM. THIS OPTION MUST BE SPECIFIED IF AND ONLY IF THE KEYBOARD ON PRINTER 0 IS TO BE TESTED.

(PRINTER 0 IS THAT PRINTER WHICH HAS BEEN EDITED AS THE FIRST EDIT POSITION).

IF THE MONITOR IS USING PRINTER 0 TO OUTPUT MESSAGES, THIS OPTION WILL CAUSE,

1. THE SUPPRESSION OF ALL 1816 PRINTER 0 PRINTOUTS NOT ORIGINATED BY THIS PROGRAM.
2. A LACK OF MONITOR RESPONSE TO CONSOLE INTERRUPT UNTIL THE MONITOR CAN AGAIN PRINT ON PRINTER 0.
3. THE TEMPORARY DELAY OF CONTINUATION OF OVERLAP, UNTIL COMPLETION OF THE KEYBOARD ROUTINE.

THE KEYBOARD ROUTINE IS ENDED BY DEPRESSING THE EOF KEY WHILE IN PROCEED STATUS. THIS ACTION ALSO RESETS THE ROUTINE 12 OPTION.

---------- LAST PAGE ----------

6 APPENDIX

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.

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 "FFF" (COL. 7-10).

CARD 0 - HAS ONE DDEF ENTRY FOR EACH OF THE TYPEWRITERS ON THE SYSTEM (PRTR. 1 - PRTR. 8), ONE ENTRY TO DEFINE WHICH OF THESE ARE 1816'S (IDENTIFY 1816'S), AND ONE DDEF ENTRY TO IDENTIFY WHICH OF THE TYPEWRITERS HAS BEEN ASSIGNED AS THE DIAGNOSTIC MONITOR'S OUTPUT DEVICE. WHEN A TYPEWRITER IS ASSIGNED AS THE DIAGNOSTIC MONITOR'S OUTPUT DEVICE, THE DDEF IS PUNCHED IN THE MONITOR OUTPUT DEVICE ENTRY, AND THE TYPEWRITER'S NORMAL DDEF ENTRY WILL BE PUNCHED 0000. IF THE C.E. WISHES TO USE THE 1443 AS THE DIAGNOSTIC MONITOR'S OUTPUT DEVICE, THERE IS NO NEED TO ALTER THE 1053/1816 EDIT CARD. (REFER TO EDIT CARD ZERO OF THE DIAGNOSTIC MONITOR.)

CARD END IS THE "END EDIT CARD". PUNCH EXACTLY AS IS SHOWN.

IMPORTANT: NO TWO DDEF'S CAN BE ALIKE AND ANY UNUSED DDEF'S MUST BE PUNCHED WITH ZEROS.

*THE 1816 IDENTIFICATION FIELD SHOULD BE PUNCHED IN THE FOLLOWING MANNER:
1. IN FIGURE AT RIGHT, PLACE A 1 IN THE POSITIONS CORRESPONDING TO 1816 DDEF'S.
2. PLACE ZEROS FOR EACH ONE WHICH IS NOT AN 1816.
3. CONVERT THE RESULTANT NUMBER TO HEX AND ENTER THAT NUMBER IN COLS. 62 AND 63.

1816 ID EDIT	MON. OUTPUT	PRINTER 1				PRINTER 5		
	0	1	0	0	0	1	0	0

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				MONITOR OUTPUT DEV DDEF					PTR. 1 DDEF	PTR. 2 DDEF	PTR. 3 DDEF	PTR. 4 DDEF	PTR. 5 DDEF	PTR. 6 DDEF	PTR. 7 DDEF	PTR. 8 DDEF	IDENTIFY 1816's *		
																	INTERRUPT LEVEL (HEX)	ILSW BIT	CHANNEL (OR F)		INTERRUPT LEVEL (HEX)	INTERRUPT LEVEL (HEX)	INTERRUPT LEVEL (HEX)	INTERRUPT LEVEL (HEX)	INTERRUPT LEVEL (HEX)	INTERRUPT LEVEL (HEX)	INTERRUPT LEVEL (HEX)	INTERRUPT LEVEL (HEX)	1816 IDENTIFICATION		
CARD 0	E	0	6	0	0		E	D	0	0		0	0	0	A															0	0
END	E	0	6	0	0		F	F	F	F																					

DATE 28FEB66 01MAY66 010CT67
EC NO. 415120 415120A 411875

PROG ID 0806-*
PAGE 4

```
CARRIER RETURN                 TABULATE
CARRIER RETURN                 TABULATE

ABCDEFGHIJKLMNOPQRSTUVWXYZ (+<¬);*'"|=_?:>|%¢
ABCDEFGHIJKLMNOPQRSTUVWXYZ (+<¬);*'"|=_?:>|%¢

ABCDEFGHIJKLMNOPQRSTUVWXYZ 1234567890#/-,&$@.
ABCDEFGHIJKLMNOPQRSTUVWXYZ 1234567890#/-,&$@.
••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••
                    BACK SPACE
                             I
                             N
                             N
                             E
                             X
                    BACK SPACE
                             I
                             N
                             D
                             E
                             X

CARRIER RETURN
                               CARRIER RETURN

#,$.|RZ96WOFDMU42SKB@&-08YQHGPX75VNECLT31/JA ¢!:="ZRIFOW;¬UMDBKS+|?>%HQY'*XPGENV)<TLCAJ_(
#,$.|RZ96WOFDMU42SKB@&-08YQHGPX75VNECLT31/JA ¢!:="ZRIFOW;¬UMDBKS+|?>%HQY'*XPGENV)<TLCAJ_(

#$642087531/TVXY-SUWZ,$ROMK&QPNLJACEGH@BDFI. ACEGH%BDFI¢!ROMK>QPNLJ_TVXY?SUWZ:=";¬+|'*)<(
#9642087531/TVXY-SUWZ,$ROMK&QPNLJACEGH@BDFI. ACEGH%BDFI¢!ROMK>QPNLJ_TVXY?SUWZ:=";¬+|'*)<(

#A,J$_.(|<RTZL9C6EWNOVF)D*MXUP4G2HSQKYB'@|&?->0%8BYKQSH+G¬PUXM7D5FVONWE;C"LZTR3||¢/|J:A=
#A,J$_.(|<RTZL9C6EWNOVF)D*MXUP4G2HSQKYB'@|&?->0%8BYKQSH+G¬PUXM7D5FVONWE;C"LZTR3||¢/|J:A=
```

FIGURE 1

SAMPLE OUTPUT OF 1053 PROGRAM.

```
                        *                                                       80600020
                        *                                                       80600030
                        *              1800 DIAGNOSTIC MONITOR                  80600040
                        *                                                       80600050
                        *              TRANSFER VECTOR                          80600060
                        *                                                       80600070
                        *                                                       80600080
012C 0                  BEGIN EQU     300                                       80600090
012D 0                  START EQU     BEGIN&1                                   80600100
012E 0                  END   EQU     START&1                                   80600110
012F 0                  LOG   EQU     END&1                                     80600120
0130 0                  ERROR EQU     LOG&1                                     80600130
0131 0                  REQDV EQU     ERROR&1                                   80600140
0132 0                  RELDV EQU     REQDV&1                                   80600150
0133 0                  HALT  EQU     RELDV&1                                   80600160
                        *                                                       80600170
                        *                                                       80600180
                        *              TABLE OF INDEXES FOR REFERENCE           80600190
                        *                   TO PRINTER STATUS TABLES            80600200
                        *                                                       80600210
                        *              INDEX REG 3 ALWAYS HAS THE ADDR          80600220
                        *                   OF THE PRINTER TABLE                80600230
                        *                                                       80600240
0000 0                  ADR   EQU     0                                         80600250
0001 0                  RTN   EQU     1                                         80600260
0002 0                  STS   EQU     2                                         80600270
0003 0                  OUT   EQU     3                                         80600280
0004 0                  ITR   EQU     4                                         80600290
0005 0                  SLT   EQU     5                                         80600300
0006 0                  NOS   EQU     6                                         80600310
0007 0                  PAD   EQU     7                                         80600320
0008 0                  WRT   EQU     8                                         80600330
000A 0                  PTR   EQU     10                                        80600340
000C 0                  KEY   EQU     12                                        80600350
000E 0                  SEE   EQU     14                                        80600360
0010 0                  ERR   EQU     16                                        80600370
                        *                                                       80600380
                        *                                                       80600390
07FF                          ORG     *&2047                                    80600400
                        ********************************************            80600410
                        *                DIAGNOSTIC MONITOR        *            80600420
                        *                    CONTROLLED            *            80600430
                        *                1800 STEREO 1816-1053     *            80600440
                        *                PTR FUNCTION TEST         *            80600450
                        ********************************************            80600460
07FF 0 0600             PID   DC      /0600       PROGRAM ID NO                 80600470
0800 0 0001             RID   DC      1           ONE TEST NUMBER               80600480
0801 1 09E3             RAD   DC      PRCON       TEST STARTING ADDR            80600490
0802 0 0000             SW0   DC      /0000       FCN 00  CONTROL               80600500
0803 0 0000             SW1   DC      /0000       FCN 01 RTN SELECT             80600510
0804 0 0000             SW2   DC      /0000       PTR SELECT FUNCTION           80600520
0805 0 0000             SW3   DC      /0000       DATA FOR PRINTERS             80600530
0806 1 08FE                   DC      GO          INITIALIZE ADDR               80600540
0807 1 091F                   DC      AGAIN       LOOP PROGRAM ADDR             80600550
0808 1 0CBC             EPA   DC      TEND        END PROGRAM ADDR              80600560
0809 0 0000             MLSCF DC      0           PROGRAM CONTROL FLD           80600570
080A 0 FFFF             TERM  DC      /FFFF       TERMINATOR                    80600580
080B 1 0FFD                   DC      PEND        LAST PROGRAM ADDR             80600590
080C 0 0000                   DC      0                                         80600600
080D 0 0000                   DC      0                                         80600610
080E 0 0000                   DC      0                                         80600620
080F 0 0000             ONLIN DC      /0000       ZERO EQUAL OFF-LINE           80600630
0810 0 0002                   DC      /0002       COMPATIBILITY SWITCH          80600640
                        *                   DEVICE DEFINITION EDIT              80600650
0811 0 0000             DDEF0 DC      /0000       MONITOR LOGGING DEV           80600660
0812 0 0000             DDEF1 DC      /0000       PRINTER NO 1                  80600670
0813 0 0000             DDEF2 DC      /0000       PRINTER NO 2                  80600680
0814 0 0000             DDEF3 DC      /0000       PRINTER NO 3                  80600690
```



```
0815 0 0000             DDEF4 DC      /0000       PRINTER NO 4                  80600700
0816 0 0000             DDEF5 DC      /0000       PRINTER NO 5                  80600710
0817 0 0000             DDEF6 DC      /0000       PRINTER NO 6                  80600720
0818 0 0000             DDEF7 DC      /0000       PRINTER NO 7                  80600730
0819 0 0000             DDEF8 DC      /0000       PRINTER NO 8                  80600740
                        *                                                       80600750
081A 0 C400             P16EF DC      /C400       1816 IDENT WORD               80600760
081B 0 0000             DDEFX DC      *-*          DDEFO SAVE AREA              80600770
                        ********************************************            80600780
                        *                                                       80600790
                        *                PRINTER INTERRUPT ROUTINE              80600800
                        *                                                       80600810
081C 0 0000             INTSW DC      /0000       INTERRUPT EXSPECTED           80600820
081D 0 0000             DVA0  DC      /0000       PTR 0 AREA CODE               80600830
                        *                                                       80600840
081E 0 0000             PTR0I DC      /0000       PTR 0 INTERRUPT RTN  IE       80600850
081F 0 1010                   SLA     16          CLEAR ACC                     80600860
0820 0 D0FB                   STO     INTSW       CLEAR INTERRUPT SW            80600870
0821 0 C0F8                   LD      P16EF       SET PRINTER ID                80600880
0822 0 18D0                   RTE     16                                        80600890
0823 1 6700 0EA8              LDX   L3 PTR0                                     80600900
0825 0 404A                   BSI     COMIN                                     80600910
0826 1 4C80 081E              BSC   I PTR0I                             IX      80600920
                        *                                                       80600930
                        *                                                       80600940
0828 0 0000             DVA1  DC      /0000       PTR 1 AREA CODE               80600950
                        *                                                       80600960
0829 0 0000             PTR1I DC      /0000       PTR 1 INTERRUPT RTN  IE       80600970
082A 0 C0EF                   LD      P16EF       SET PRINTER ID                80600980
082B 0 18CF                   RTE     15                                        80600990
082C 1 6700 0EBA              LDX   L3 PTR1                                     80601000
082E 0 4041                   BSI     COMIN                                     80601010
082F 1 4C80 0829              BSC   I PTR1I                             IX      80601020
                        *                                                       80601030
                        *                                                       80601040
0831 0 0000             DVA2  DC      /0000       PTR 2 AREA CODE               80601050
                        *                                                       80601060
0832 0 0000             PTR2I DC      /0000       PTR 2 INTERRUPT RTN  IE       80601070
0833 0 C0E6                   LD      P16EF       SET PRINTER ID                80601080
0834 0 18CE                   RTE     14                                        80601090
0835 1 6700 0ECC              LDX   L3 PTR2                                     80601100
0837 0 4038                   BSI     COMIN                                     80601110
0838 1 4C80 0832              BSC   I PTR2I                             IX      80601120
                        *                                                       80601130
                        *                                                       80601140
083A 0 0000             DVA3  DC      /0000       PTR 3 AREA CODE               80601150
                        *                                                       80601160
083B 0 0000             PTR3I DC      /0000       PTR 3 INTERRUPT RTN  IE       80601170
083C 0 C0DD                   LD      P16EF       SET PRINTER ID                80601180
083D 0 18CD                   RTE     13                                        80601190
083E 1 6700 0EDE              LDX   L3 PTR3                                     80601200
0840 0 402F                   BSI     COMIN                                     80601210
0841 1 4C80 083B              BSC   I PTR3I                             IX      80601220
                        *                                                       80601230
                        *                                                       80601240
0843 0 0000             DVA4  DC      /0000       PTR 4 AREA CODE               80601250
                        *                                                       80601260
0844 0 0000             PTR4I DC      /0000       PTR 4 INTERRUPT RTN  IE       80601270
0845 0 C0D4                   LD      P16EF       SET PRINTER ID                80601280
0846 0 18CC                   RTE     12                                        80601290
0847 1 6700 0EF0              LDX   L3 PTR4                                     80601300
0849 0 4026                   BSI     COMIN                                     80601310
084A 1 4C80 0844              BSC   I PTR4I                             IX      80601320
                        *                                                       80601330
                        *                                                       80601340
084C 0 0000             DVA5  DC      /0000       PTR 5 AREA CODE               80601350
                        *                                                       80601360
084D 0 0000             PTR5I DC      /0000       PTR 5 INTERRUPT RTN  IE       80601370
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084E 0 C0CB            LD     P16EF     SET PRINTER ID                80601380
084F 0 18CB            RTE    11                                      80601390
0850 1 6700 0F02       LDX  L3 PTR5                                    80601400
0852 0 401D            BSI    COMIN                                   80601410
0853 1 4C80 084D       BSC  I PTR5I                              IX    80601420
                       *                                              80601430
                       *                                              80601440
0855 0 0000      DVA6  DC     /0000     PTR 6 AREA CODE               80601450
                       *                                              80601460
0856 0 0000      PTR6I DC     /0000     PTR 6 INTERRUPT RTN     IE    80601470
0857 0 C0C2            LD     P16EF     SET PRINTER ID                80601480
0858 0 18CA            RTE    10                                      80601490
0859 1 6700 0F14       LDX  L3 PTR6                                    80601500
085B 0 4014            BSI    COMIN                                   80601510
085C 1 4C80 0856       BSC  I PTR6I                              IX    80601520
                       *                                              80601530
                       *                                              80601540
085E 0 0000      DVA7  DC     /0000     PTR 7 AREA CODE               80601550
                       *                                              80601560
085F 0 0000      PTR7I DC     /0000     PTR 7 INTERRUPT RTN     IE    80601570
0860 0 C0B9            LD     P16EF     SET PRINTER ID                80601580
0861 0 18C9            RTE    9                                       80601590
0862 1 6700 0F26       LDX  L3 PTR7                                    80601600
0864 0 400B            BSI    COMIN                                   80601610
0865 1 4C80 085F       BSC  I PTR7I                              IX    80601620
                       *                                              80601630
                       *                                              80601640
0867 0 0000      DVA8  DC     /0000     PTR 8 AREA CODE               80601650
                       *                                              80601660
0868 0 0000      PTR8I DC     /0000     PTR 8 INTERRUPT RTN     IE    80601670
0869 0 C0B0            LD     P16EF     SET PRINTER ID                80601680
086A 0 18C8            RTE    8                                       80601690
086B 1 6700 0F38       LDX  L3 PTR8                                    80601700
086D 0 4002            BSI    COMIN                                   80601710
086E 1 4C80 0868       BSC  I PTR8I                              IX    80601720
                       *                                              80601730
0870 0 0000      COMIN DC     /0000                                   80601740
0871 0 C302            LD     3 STS                                   80601750
0872 1 B400 0960       CMP  L K8000     BR IF PTR SELECTED            80601760
0874 0 0B0A            XIO    3 PTR     SENSE - RESET DSW             80601770
0875 0 7003            MDX      TIPE                                  80601780
0876 0 0B0A            XIO    3 PTR     SENSE - RESET DSW             80601790
0877 1 4C80 0870 COMIX BSC  I COMIN                                    80601800
                       ********************************************   80601810
0879 0 18D0      TIPE  RTE      16                                    80601820
087A 1 4C28 0884       BSC  L COMI1,&Z  BR IF 1816                    80601830
087C 0 C079            LD       II      CHECK PTR INT                 80601840
087D 0 D302      COMIL STO    3 STS                                   80601850
087E 1 C400 0960       LD   L K8000                                    80601860
0880 0 18D0            RTE      16                                    80601870
0881 1 B400 0960       CMP  L K8000     BR IF DSW ERROR               80601880
0883 0 1000            NOP                                            80601890
0884 0 7001            MDX      KEYER                                 80601900
0885 0 70F1            MDX      COMIX                                 80601910
                       *                                              80601920
0886 0 4005      KEYER BSI      DETE      CK IF 1053 FOR 1816           80601930
0887 0 70EF            MDX      COMIX     DSW OK                      80601940
0888 0 DB10            STD    3 ERR       SAVE DSW ERROR              80601950
0889 1 6F00 09E2       STX  L3 ERIND      SET ERROR INDICATOR         80601960
088B 0 70EB            MDX      COMIX                                 80601970
                       *                                              80601980
                       *              CK IF 1053 FOR 1816             80601990
                       *                                              80602000
088C 0 0000      DETE  DC       *-*       ENTRY                       80602010
088D 0 6B10            STX    3 DETX&1    SAVE XR 3                   80602020
088E 0 D01C            STO      DETS      SAVE ACC                    80602030
088F 0 1001            SLA      1                                     80602040
0890 0 F01B            EOR      K0400     KEYBD NOT READY             80602050
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0891 1 4C20 089B       BSC  L DETR,Z     BCH IF KYBD READY             80602060
                       *                                              80602070
0893 0 6306            LDX    3 6                                     80602080
0894 0 C009      DETG  LD       DETX&1    XR 3 VALUE                  80602090
0895 1 F700 08A7       EOR  L3 DETBL-1   COMPARE PTR ADRS             80602100
0897 1 4C18 08A2       BSC  L DETC1,&-   BCH IF PTR FOUND             80602110
0899 0 73FF            MDX    3 -1                                    80602120
089A 0 70F9            MDX      DETG                                  80602130
                       *                                              80602140
089B 1 7401 088C DETR  MDX  L DETE,1     ADJ RETURN ADRS, ERR        80602150
089D 0 6700 0000 DETX  LDX  L3 *-*       RESTORE XR 3                80602160
089F 0 C00B            LD       DETS      RESTORE ACC                 80602170
08A0 1 4C80 088C       BSC  I DETE        RETURN VIA ENTRY            80602180
                       *                                              80602190
08A2 1 C400 081A DETC1 LD   L P16EF                                    80602200
08A4 0 1300            SLA    3 0                                     80602210
08A5 0 4802            BSC      C         IS 1053 FOR 1816            80602220
08A6 0 70F4            MDX      DETR      * NO                        80602230
08A7 0 70F5            MDX      DETX      * YES                       80602240
                       *                                              80602250
08A8 1 0EA8      DETBL DC       PTR0      MON LOG PTR                 80602260
08A9 1 0EBA            DC       PTR1      PTR1 ADRS                   80602270
08AA 0 0000            DC       *-*       NOT USED                    80602280
08AB 0 0000      DETS  DC       *-*       ACC STORAGE                 80602290
08AC 0 0400      K0400 DC       /0400     CONSTANT                    80602300
08AD 1 0F02            DC       PTR5      PTR5 ADRS                   80602310
                       *                                              80602320
08AE 0 D04A      KBDOL STO      TEMPX     SAVE ACC                    80602330
08AF 0 1010            SLA      16        CLEAR ACC                   80602340
08B0 1 D400 0803       STO  L   SW1       REMOVE RTN 12 SELECTION     80602350
08B2 0 C046            LD       TEMPX     RESTORE ACC                 80602360
08B3 0 7003            MDX      COMI2                                 80602370
                       *                                              80602380
08B4 0 18CE      COMI1 RTE      14                                    80602390
08B5 1 4C28 08BF       BSC  L   KBDRQ,&Z  BR IF KBD REQUEST           80602400
08B7 0 18D2      COMI2 RTE      18                                    80602410
08B8 0 C302            LD     3 STS                                   80602420
08B9 1 B400 0C89       CMP  L   KE000                                 80602430
08BB 0 702C            MDX      COMI4     CHECK PRTR INTRPT           80602440
08BC 0 70BA            MDX      COMIX                                 80602450
                       *                                              80602460
08BD 0 C037            LD       KA000     SELECT KEYBOARD NEXT        80602470
08BE 0 70BE            MDX      COMIL                                 80602480
                       *                                              80602490
08BF 1 7400 080F KBDRQ MDX  L   ONLIN,0   IS IT ON-LINE               80602500
08C1 0 70EC            MDX      KBDOL     * YES                       80602510
08C2 1 C400 0803       LD   L   SW1       * NO, GET RTN NUMBER        80602520
08C4 1 E400 0B06       AND  L   BASIC     REMOVE BAD BITS             80602530
08C6 1 F400 0A2F       EOR  L   TWLVE                                 80602540
08C8 1 4C18 08CD       BSC  L   KBDRR,&-  BR IF ROUTINE 12            80602550
08CA 0 C30A            LD     3 PTR       FETCH PTR NUMBER            80602560
08CB 1 4C18 0877       BSC  L   COMIX,&-  BR IF PRINTER ZERO          80602570
08CD 0 C027      KBDRR LD       KA000     SELECT KEYBOARD NEXT        80602580
08CE 0 D302            STO    3 STS                                   80602590
08CF 0 0B0E            XIO    3 SEE       DESELECT KEYBOARD           80602600
                       *                                              80602610
08D0 1 C400 0A2F       LD   L   TWLVE                                 80602620
08D2 0 D301            STO    3 RTN       SET RTN NUMBER              80602630
                       *                                              80602640
08D3 0 63E7            LDX    3 -25       INITIALIZE KEYBOARD         80602650
08D4 1 6F00 0BA3       STX  L3 WRDCT&1  * ROUTINE                     80602660
08D6 0 6300            LDX    3 0                                     80602670
08D7 1 6F00 0BC6       STX  L3 SLTWD                                  80602680
08D9 0 6301            LDX    3 1                                     80602690
08DA 1 6F00 0C98       STX  L3 ANY&2                                  80602700
08DC 1 6F00 0AA4       STX  L3 RSADR&1                                80602710
                       *                                              80602720
08DE 1 C400 0803       LD   L   SW1                                   80602730
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08E0 1 E400 0B06          AND  L  BASIC      REMOVE BAD BITS            80602740
08E2 0 1801               SRA     1                                     80602750
08E3 1 4C20 0877          BSC  L  COMIX,Z    BR IF SW1 NOT 1 OR 0       80602760
08E5 1 D400 0803          STO  L  SW1                                   80602770
                     *                                                  80602780
08E7 0 708F               MDX     COMIX      EXIT                       80602790
                     *                                                  80602800
08E8 1 F400 0BCB    COMI4 EOR  L  KF000                                 80602810
08EA 0 4820               BSC     Z          SKIP IF READ KEYBOAR       80602820
08EB 0 7090               MDX     COMIL-1    GO CHECK PTR INT           80602830
08EC 0 C074               LD      KC000                                 80602840
08ED 0 D302               STO   3 STS                                   80602850
08EE 0 C005               LD      K4000                                 80602860
08EF 0 18D0               RTE     16                                    80602870
08F0 0 B003               CMP     K4000      BR IF KBD ERROR            80602880
08F1 0 1000               NOP                                           80602890
08F2 0 7093               MDX     KEYER                                 80602900
08F3 0 7083               MDX     COMIX                                 80602910
                     *                                                  80602920
                     *                                                  80602930
                     *                                                  80602940
                     *                                                  80602950
                     *                                                  80602960
08F4 0 4000         K4000 DC      /4000      CONSTANTS                  80602970
08F5 0 A000         KA000 DC      /A000                                 80602980
08F6 0 0002         II    DC      2                                     80602990
08F7 0 0000         FSTSW DC      *-*        ZERO AFTER FIRST PASS      80603000
08F8 0 0000         SWSTG DC      *-*        SW2 STORAGE                80603010
                    ********************************************        80603020
08F9 0 0000         TEMPX DC      *-*        TEMPORARY STORAGE          80603030
                    ********************************************        80603040
08FA 0 68FC         TYCUS STX     FSTSW       SET FIRST SWITCH          80603050
08FB 0 4480 012C          BSI  I  BEGIN       CALL ON MONITOR           80603060
08FD 1 07FF               DC      PID                          *        80603070
                    ********************************************        80603080
                     *                                                  80603090
                     *                INITIALIZATION ROUTINE            80603100
                     *                                                  80603110
08FE 0 0000         GO    DC      /0000                          SE     80603120
08FF 0 C0F7               LD      FSTSW       GET FIRST SWITCH          80603130
0900 1 4C18 090C          BSC  L  GO1,&-      BCH IF NOT FIRST PASS     80603140
0902 1 C400 0811          LD   L  DDEF0       GET MON LOG DEF           80603150
0904 1 D400 081B          STO  L  DDEFX       * AND SAVE IT             80603160
0906 1 C400 0804          LD   L  SW2         SAVE SW2                  80603170
0908 1 D400 08F8          STO  L  SWSTG                                 80603180
090A 0 1010               SLA     16          CLEAR ACC                 80603190
090B 0 D0EB               STO     FSTSW       * AND CLEAR SWITCH        80603200
090C 1 6700 0F38    GO1   LDX  L3 PTR8        GET LAST PTR ADRS         80603210
090E 0 6209               LDX   2 9                                     80603220
090F 0 C050               LD      K8000                                 80603230
0910 0 D302         RESET STO   3 STS         RESET STATUS              80603240
0911 0 2F40 000C          STS  L3 KEY,/40     CLEAR STORAGE PROT        80603250
0913 0 73EE               MDX   3 -18                                   80603260
0914 0 72FF               MDX   2 -1                                    80603270
0915 0 70FA               MDX     RESET                                 80603280
0916 1 6E00 09B9          STX  L2 PRSEL                                 80603290
0918 0 4006               BSI     AGAIN                                 80603300
0919 1 6500 0962          LDX  L1 RQST        SET MAIN LINE             80603310
091B 1 6D00 0809          STX  L1 MLSCF     * SEQ CONTROL FIELD         80603320
091D 1 4C80 08FE          BSC  I  GO                                SX  80603330
                    ********************************************        80603340
                     *                                                  80603350
                     *                LOOP PROGRAM ROUTINE              80603360
                     *                                                  80603370
091F 0 0000         AGAIN DC      /0000                                 80603380
0920 1 C400 0804          LD   L  SW2         GET FUNC 2                80603390
0922 1 7400 080F          MDX  L  ONLIN,0     TEST ON LINE              80603400
0924 0 7001               MDX     AGAN1       * YES                     80603410
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0925 0 7018               MDX     AGAN8       * NO                      80603420
                     *                                                  80603430
0926 0 6100         AGAN1 LDX   1 0                                     80603440
0927 1 6D00 0B49          STX  L1 DSWCS+1     CHANGE VALUE              80603450
0929 1 4C20 0932          BSC  L  AGAN5,Z     BCH IF PRINTER SELECTED   80603460
092B 0 61F7               LDX   1 -9                                    80603470
092C 1 C500 081A    AGAN2 LD    L1 DDEF0&9    GET DDEF ENTRY            80603480
092E 1 4C20 093A          BSC  L  AGAN4,Z     IS IT ZERO                80603490
0930 0 7101               MDX   1 1           * YES                     80603500
0931 0 70FA               MDX     AGAN2                                 80603510
                     *                                                  80603520
0932 0 6100         AGAN5 LDX   1 0                                     80603530
0933 0 4828               BSC     &Z          IS PRINTER FOUND          80603540
0934 0 7003               MDX     AGAN6       * YES                     80603550
0935 0 1001               SLA     1           * NO                      80603560
0936 0 7101               MDX   1 1                                     80603570
0937 0 70FB               MDX     AGAN5&1                               80603580
                     *                                                  80603590
0938 1 C500 0811    AGAN6 LD    L1 DDEF0                                80603600
093A 1 D400 0811    AGAN4 STO   L  DDEF0        STORE PTR TO TEST       80603610
093C 0 C023               LD      K8000                                 80603620
093D 0 7006               MDX     XX                                    80603630
                     *                                                  80603640
093E 1 C400 0804    AGAN8 LD    L  SW2                                  80603650
0940 1 4C20 0944          BSC  L  XX,Z        BCH IF PTR SELECTED       80603660
0942 1 C400 09B6          LD   L  KFF80       * NO, SELECT ALL PTR      80603670
0944 1 D400 0804    XX    STO  L  SW2         SET PTR SELECTED          80603680
0946 1 D400 09B7          STO  L  SWCMP                                 80603690
                     *                                                  80603700
0948 1 6500 09BA          LDX  L1 SELT        SET MAIN LINE             80603710
094A 1 6D00 0809          STX  L1 MLSCF     * SEQUENTIAL CONTROL        80603720
094C 1 4C80 091F          BSC  I  AGAIN                                 80603730
                    ********************************************        80603740
                     *                                                  80603750
094E 1 0811         DDEFS DC      DDEF0                                 80603760
094F 1 0812               DC      DDEF1                                 80603770
0950 1 0813               DC      DDEF2                                 80603780
0951 1 0814               DC      DDEF3                                 80603790
0952 1 0815               DC      DDEF4                                 80603800
0953 1 0816               DC      DDEF5                                 80603810
0954 1 0817               DC      DDEF6                                 80603820
0955 1 0818               DC      DDEF7                                 80603830
0956 1 0819               DC      DDEF8                                 80603840
                     *                                                  80603850
0957 1 081D         DVAS  DC      DVA0        ADDR OF AREA CODE         80603860
0958 1 0828               DC      DVA1                                  80603870
0959 1 0831               DC      DVA2                                  80603880
095A 1 083A               DC      DVA3                                  80603890
095B 1 0843               DC      DVA4                                  80603900
095C 1 084C               DC      DVA5                                  80603910
095D 1 0855               DC      DVA6                                  80603920
095E 1 085E               DC      DVA7                                  80603930
095F 1 0867               DC      DVA8                                  80603940
                     *                                                  80603950
                     *                                                  80603960
0960 0 8000         K8000 DC      /8000       PTR SVC INT DSW S/B       80603970
0961 0 C000         KC000 DC      /C000                                 80603980
                    ********************************************        80603990
                     *                                                  80604000
                     *              REQUEST DEVICE ROUTINE              80604010
                     *                                                  80604020
                     *                                                  80604030
0962 1 6700 0CDD    RQST  LDX   L3 TEND3                                80604040
0964 1 6600 0984          LDX   L2 RQST8                                80604050
0966 0 61F7               LDX    1 -9                                   80604060
0967 1 C500 081A    RQST1 LD    L1 DDEF0&9                              80604070
0969 1 4C20 0976          BSC  L  RQST2,Z     BR IF DEVICE EDITED       80604080
096B 0 7101         RQST3 MDX    1 1                                    80604090
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096C 0 70FA              MDX     RQST1                                  80604100
096D 0 C028              LD      RQSTT       TERMINATE FIELDS           80604110
096E 0 D300              STO   3 0                                      80604120
096F 0 D200              STO   2 0                                      80604130
                    *                                                   80604140
0970 1 C400 081A         LD    L P16EF       ASSURE PROPER EDIT         80604150
0972 0 E043              AND     KFF80       REMOVE BAD BITS            80604160
0973 1 D400 081A         STO   L P16EF                                  80604170
0975 0 700B              MDX     RQSTC                                  80604180
                    *                                                   80604190
                    *                                                   80604200
0976 1 C500 0957    RQST2 LD    L1 DDEFS&9    PLACE DEVICE               80604210
0978 0 D200              STO   2 0           * CONSTANTS IN             80604220
0979 0 7201              MDX   2 1           * REQUEST & RELEASE        80604230
097A 0 D300              STO   3 0           * AREAS                    80604240
097B 0 7301              MDX   3 1                                      80604250
097C 1 C500 0960         LD    L1 DVAS&9                                80604260
097E 0 D200              STO   2 0                                      80604270
097F 0 7201              MDX   2 1                                      80604280
0980 0 70EA              MDX     RQST3                                  80604290
                    *                                                   80604300
                    ***********************************************     80604310
                    *                                                   80604320
                    *                                                   80604330
0981 0 4480 0131    RQSTC BSI   I REQDV       REQUEST DEVICE     *      80604340
0983 1 09AD              DC      RQST5       BUSY RETURN        *      80604350
0984 0 7012         RQST8 MDX       RQST6                      *      80604360
0985 0 7011              MDX     RQST6                        *      80604370
0986 0 7010              MDX     RQST6                        *      80604380
0987 0 700F              MDX     RQST6                        *      80604390
0988 0 700E              MDX     RQST6                        *      80604400
0989 0 700D              MDX     RQST6                        *      80604410
098A 0 700C              MDX     RQST6                        *      80604420
098B 0 700B              MDX     RQST6                        *      80604430
098C 0 700A              MDX     RQST6                        *      80604440
098D 0 7009              MDX     RQST6                        *      80604450
098E 0 7008              MDX     RQST6                        *      80604460
098F 0 7007              MDX     RQST6                        *      80604470
0990 0 7006              MDX     RQST6                        *      80604480
0991 0 7005              MDX     RQST6                        *      80604490
0992 0 7004              MDX     RQST6                        *      80604500
0993 0 7003              MDX     RQST6                        *      80604510
0994 0 7002              MDX     RQST6                        *      80604520
0995 0 7001              MDX     RQST6                        *      80604530
0996 1 080A         RQSTT DC        TERM                       *      80604540
                    ***********************************************     80604550
0997 1 6700 0F38    RQST6 LDX   L3 PTR8       BUILD XIO COMMANDS         80604560
0999 0 6109              LDX     1 9                                    80604570
099A 1 C580 0956    BUILD LD    I1 DVAS-1                              80604580
099C 0 E816              OR      K0100                                  80604590
099D 0 D309              STO     3 WRT&1                                80604600
099E 0 E815              OR      K0701                                  80604610
099F 0 D30B              STO     3 PTR&1                                80604620
09A0 1 C580 0956         LD    I1 DVAS-1                              80604630
09A2 1 EC00 08AC         OR    L K0400                                  80604640
09A4 0 D30D              STO     3 KEY&1                                80604650
09A5 1 C580 0956         LD    I1 DVAS-1                              80604660
09A7 0 E80D              OR      K0200                                  80604670
09A8 0 D30F              STO     3 SEE&1                                80604680
09A9 0 73EE              MDX     3 -18                                  80604690
09AA 0 71FF              MDX     1 -1                                   80604700
09AB 0 70EE              MDX     BUILD                                  80604710
                    *                                                   80604720
09AC 0 700D              MDX     SELT                                   80604730
                    *                                                   80604740
                    *                                                   80604750
09AD 1 6500 0981    RQST5 LDX   L1 RQSTC      TRY LATER                  80604760
09AF 1 6D00 0809    RQST9 STX   L1 MLSCF                               80604770
```



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09B1 0 4C80 012D         BSC   I START                                  80604780
                    *                                                   80604790
                    *                                                   80604800
09B3 0 0100         K0100 DC      /0100                                 80604810
09B4 0 0701         K0701 DC      /0701                                 80604820
09B5 0 0200         K0200 DC      /0200                                 80604830
09B6 0 FF80         KFF80 DC      /FF80       CONSTANT                  80604840
09B7 0 0000         SWCMP DC      /0000        SW2 COMPARE WORD         80604850
09B8 0 0000         TEMP  DC      /0000                                 80604860
09B9 0 0000         PRSEL DC      /0000       NO OF PTRS SELTD          80604870
                    *                                                   80604880
09BA 1 C400 0804    SELT  LD    L SW2                                   80604890
09BC 0 1807               SRA     7                                     80604900
09BD 1 4C08 0CB3          BSC   L TYEND,&     END IF NO SELECT          80604910
09BF 1 4400 08FE          BSI   L GO          DESELECT ALL PTRS         80604920
09C1 0 6109               LDX     1 9                                   80604930
09C2 1 6700 0F38          LDX   L3 PTR8                                 80604940
09C4 1 C400 0804          LD    L SW2                                   80604950
09C6 0 1806               SRA     6                                     80604960
09C7 0 4009         SELT7 BSI       WHCH        SELECT PRINTER          80604970
09C8 0 C302               LD      3 STS                                 80604980
09C9 0 F096               EOR     K8000                                 80604990
09CA 1 4C20 09D8          BSC   L WHCH1,Z     BR IF PTR SELTD           80605000
                    *                                                   80605010
09CC 1 7401 09B9          MDX   L PRSEL,1     SELECT ONE PRINTER        80605020
09CE 0 C0F8               LD      SELT7                                 80605030
09CF 0 D302               STO     3 STS                                 80605040
09D0 0 7007               MDX     WHCH1                                 80605050
                    *                                                   80605060
                    *                                                   80605070
                    *                                                   80605080
                    *                                                   80605090
09D1 0 0000         WHCH  DC      /0000        CAN PTR BE LEGALLY       80605100
                    *                         * SELECTED OR             80605110
09D2 0 D0E5               STO     TEMP        * DESELECTED              80605120
09D3 0 C0E4         WHCH2 LD        TEMP                                80605130
09D4 0 1801               SRA     1                                     80605140
09D5 0 D0E2               STO     TEMP                                  80605150
09D6 0 4804               BSC     E                                     80605160
09D7 0 7004               MDX     WHCH4       FOUND ONE WNTD            80605170
09D8 0 73EE         WHCH1 MDX     3 -18                                 80605180
09D9 0 71FF               MDX     1 -1                                  80605190
09DA 0 70F8               MDX     WHCH2                                 80605200
09DB 0 7007               MDX     PRCON                                 80605210
09DC 1 C580 0956    WHCH4 LD    I1 DVAS-1                               80605220
09DE 1 4C18 09D8          BSC   L WHCH1,&-     BR IF NO PTR THERE        80605230
09E0 1 4C80 09D1          BSC   I WHCH        RET TO SEL OR DESEL       80605240
                    *                                                   80605250
09E2 0 0000         ERIND DC      /0000       ERROR INDICATOR           80605260
                    *                                                   80605270
                    *                   PRINTER TEST                    80605280
                    *                                                   80605290
09E3 1 C400 0EAA    PRCON LD    L PTRO&STS    FETCH STS OF PTRO         80605300
09E5 0 1004               SLA     4                                     80605310
09E6 1 4C28 09F4          BSC   L CKERR,&Z    BR IF NO RELES PTRO       80605320
                    *                                                   80605330
09E8 1 C400 0803          LD    L SW1         FETCH ROUTINE NO          80605340
09EA 1 E400 0B06          AND   L BASIC       REMOVE BAD BITS           80605350
09EC 0 F042               EOR     TWLVE                                 80605360
09ED 1 4C20 09F3          BSC   L CKHAV,Z     BR IF NOT KBD RTN         80605370
                    *                                                   80605380
09EF 1 C400 081A          LD    L P16EF                                 80605390
09F1 1 4C28 09F4          BSC   L CKERR,&Z    BR IF 1816                80605400
                    *                                                   80605410
09F3 0 4022         CKHAV BSI       CKREL       CHECK RELEASE           80605420
                    *                                                   80605430
09F4 0 C0ED         CKERR LD        ERIND                               80605440
09F5 1 4C20 0B09          BSC   L INERR,Z     BR IF ERROR INDICATD      80605450
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09F7 1 C400 0804          LD   L  SW2                              80605460
09F9 0 F0BD               EOR      SWCMP                           80605470
09FA 0 1807               SRA      7                               80605480
09FB 1 4C20 09BA          BSC  L   SELT,Z      BR IF SWS CNGED     80605490
                     *                                            80605500
09FD 0 C0BB               LD       PRSEL                           80605510
09FE 1 4C08 0CB3          BSC  L   TYEND,&     BR IF LAST PTR DONE 80605520
                     ********************************************** 80605530
                     *                                            80605540
                     *                                            80605550
0A00 0 6600 0009     EXEC  LDX  L2 9           RESTORE RTN STATUS  80605560
0A02 1 6700 0F38     EXEC1 LDX  L3 PTR8                            80605570
                     *                                            80605580
0A04 0 C302          EXEC2 LD    3 STS                             80605590
0A05 0 D060               STO      RESTO                           80605600
0A06 1 4C10 0A42          BSC  L   EXEC3,-     BR IF PTR SVC RQSTD 80605610
                     *                                            80605620
0A08 0 B024               CMP      KF800                           80605630
0A09 0 7027               MDX      SVCAD                           80605640
0A0A 0 1001               SLA      1                               80605650
0A0B 1 4C18 0A39          BSC  L   EXEC0,&-    TAKE NEXT PTR BRANCH 80605660
0A0D 0 180E               SRA      14                              80605670
0A0E 1 B400 08F6          CMP  L   II          IS KBD SVC REQSTD   80605680
0A10 0 7028               MDX      EXEC0       NO - BRANCH         80605690
0A11 0 7002               MDX      EXEC5       SELECT KEYBOARD NEXT 80605700
0A12 0 6102               LDX   1 2           READ KBD SET UP      80605710
0A13 0 7031               MDX      EXEC6&1                         80605720
                     *                                            80605730
0A14 0 6101          EXEC5 LDX    1 1          SELECT KEYBOARD SET 80605740
0A15 0 702F               MDX      EXEC6&1                         80605750
                     *                                            80605760
0A16 0 0000          CKREL DC      *-*         RETURN ADRS         80605770
0A17 1 C400 0811          LD   L   DDEF0       GET MON DDEF        80605780
0A19 1 4C90 0A16          BSC  I   CKREL,-     BCH IF MON LOG RELEASED 80605790
                     ********************************************** 80605800
0A1B 0 4480 0132          BSI  I   RELDV       REL MON LOG DEVICE  80605810
0A1D 1 0811               DC       DDEF0                           80605820
0A1E 1 080A               DC       TERM                            80605830
                     ********************************************** 80605840
0A1F 0 6908               STX    1 CKRXT+1     SAVE XR1            80605850
0A20 0 6A09               STX    2 CKRXT+3     SAVE XR2            80605860
0A21 1 6700 0A27          LDX  L3 CKRXT        GET ENTRY           80605870
0A23 1 6F00 0809          STX  L3 MLSCF        * AND SET TABLE     80605880
0A25 0 4C80 012D          BSC  I   START       GO TO MONITOR       80605890
                     *                                            80605900
0A27 0 6500 0000     CKRXT LDX  L1 *-*         RESTORE XR1         80605910
0A29 0 6600 0000          LDX  L2 *-*          RESTORE XR2         80605920
0A2B 1 4C80 0A16          BSC  I   CKREL                           80605930
                     *                                            80605940
0A2D 0 F800          KF800 DC      /F800                          80605950
0A2E 0 FC00          KFC00 DC      /FC00                          80605960
0A2F 0 000C          TWLVE DC      12          CONSTANT            80605970
0A30 0 000B          ELVEN DC      11          CONSTANT            80605980
                     *                                            80605990
0A31 0 6B03          SVCAD STX    3 SVC&1       COUNT DOWN FOR INT  80606000
0A32 1 7402 0A35          MDX  L   SVC&1,2                         80606010
0A34 1 7401 0EAA     SVC   MDX  L   PTR0&STS,1                    80606020
0A36 0 7002               MDX      EXEC0                           80606030
0A37 0 6103               LDX   1 3           PRINT NO INT ERROR   80606040
0A38 0 700C               MDX      EXEC6&1                         80606050
                     *                                            80606060
                     *                                            80606070
0A39 0 73EE          EXEC0 MDX    3 -18        TAKE NEXT PTR       80606080
0A3A 0 72FF               MDX    2 -1                              80606090
0A3B 0 70C8               MDX      EXEC2                           80606100
                     *                                            80606110
0A3C 0 6109               LDX    1 9           RESTORE RTN STATUS  80606120
0A3D 0 69C3               STX    1 EXEC&1                        80606130
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0A3E 1 6500 0F38          LDX  L1 PTR8                             80606140
0A40 0 69C2               STX    1 EXEC1&1                         80606150
0A41 0 7028               MDX      EXEC9                           80606160
                     *                                            80606170
0A42 0 C0EB          EXEC3 LD       KFC00       SERVICE PRINTER     80606180
0A43 0 6100               LDX    1 0                               80606190
                     *                                            80606200
0A44 0 D302          EXEC6 STO    3 STS         UPDATE PRINTER STS  80606210
0A45 0 73EE               MDX    3 -18                             80606220
0A46 0 6BBC               STX    3 EXEC1&1                         80606230
                     *                                            80606240
0A47 0 72FF               MDX    2 -1          SKIP IF PTR 0       80606250
0A48 0 7012               MDX      EXECA                           80606260
                     *                                            80606270
0A49 0 6209               LDX    2 9           RESTORE RTN STATUS  80606280
0A4A 0 6AB6               STX    2 EXEC&1                          80606290
0A4B 1 6600 0F38          LDX  L2 PTR8                             80606300
0A4D 0 6AB5               STX    2 EXEC1&1                         80606310
0A4E 0 40C7               BSI      CKREL       CHECK RELEASE       80606320
                     ********************************************** 80606330
0A4F 1 7401 081C          MDX  L   INTSW,1      SET INTR SW         80606340
0A51 0 1000               NOP                                      80606350
0A52 0 4480 0131          BSI  I   REQDV        REQUEST USE OF MON * SC 80606360
0A54 1 0A67               DC       EXEC7       * LOGGING DEVICE    * 80606370
0A55 1 0811               DC       DDEF0                           * 80606380
0A56 1 081D               DC       DVA0                            * 80606390
0A57 1 080A               DC       TERM                            * 80606400
                     ********************************************** 80606410
0A58 1 6700 0E96     EXEC8 LDX  L3 PTR0-18                         80606420
0A5A 0 7001               MDX      ADRS                            80606430
                     *                                            80606440
                     *                                            80606450
0A5B 0 6AA5          EXECA STX    2 EXEC&1      RESTORE RTN STATUS  80606460
                     *                                            80606470
0A5C 0 7313          ADRS  MDX    3 19          SETUP CHAR RTNN     80606480
0A5D 0 6B61               STX    3 MARKL&1                         80606490
0A5E 0 73FF               MDX    3 -1                              80606500
0A5F 0 6B5D               STX    3 MARKG&1                         80606510
0A60 1 4D80 0A62          BSC   I1 NEXT                            80606520
                     *                                            80606530
                     *                                            80606540
                     *                                            80606550
0A62 1 0AF5          NEXT  DC       READY       PRINTER READY & TYPE 80606560
0A63 1 0B53               DC       SELC2       KBD PROCEED STS     80606570
0A64 1 0B74               DC       KEYBD       READ KEY CHARACTER  80606580
0A65 1 0B4A               DC       NOIN        NO INTERRUPT  EXIT  80606590
                     *                                            80606600
0A66 0 0000          RESTO DC       /0000                          80606610
                     *                                            80606620
                     *                                            80606630
0A67 0 C0FE          EXEC7 LD       RESTO                          80606640
0A68 1 D400 0EAA          STO  L   PTR0&STS                        80606650
0A6A 1 6400 0AEF     EXEC9 LDX  L   MARKX                          80606660
                     ********************************************** 80606670
                     *                                            80606680
0A6C 0 0001          I     DC       1                              80606690
0A6D 0 0000          OUTWD DC       *-*         OUTPUT TEMP STG     80606700
                     *                                            80606710
0A6E 1 C400 0803     MARK  LD   L   SW1                            80606720
0A70 1 E400 0B06          AND  L   BASIC       REMOVE BAD BITS     80606730
0A72 0 B08D               CMP      ELVEN       IS TYPE SWS ROUTINE 80606740
0A73 0 1000               NOP                                      80606750
0A74 0 7047               MDX      MARKG       NO                  80606760
                     *                                            80606770
0A75 1 C400 0805          LD   L   SW3                             80606780
0A77 0 1808               SRA      8                               80606790
0A78 0 F0F3               EOR      I                               80606800
0A79 0 4820               BSC      Z           SKIP IF ILLEGAL CODE 80606810
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0A7A 0 F0F1              EOR     I                                80606820
0A7B 0 D0F1              STO     OUTWD                            80606830
0A7C 0 C303              LD    3 OUT          SAVE RHS OF OLD WORD 80606840
0A7D 0 18C8              RTE     8                                80606850
0A7E 0 B0EE              CMP     OUTWD        CK IF SHOULD BE     80606860
0A7F 0 1000              NOP                  * SHIFTED           80606870
0A80 0 700A              MDX     MARKB                            80606880
                         *                                        80606890
0A81 1 C400 0805         LD    L SW3                              80606900
0A83 0 1008              SLA     8            TAKE RIGHT HALF WORD 80606910
0A84 0 1808              SRA     8                                80606920
0A85 0 F0E6              EOR     I                                80606930
0A86 0 4820              BSC     Z            SKIP IF ILLEGAL CODE 80606940
0A87 0 F0E4              EOR     I                                80606950
0A88 0 1088      MARKA   SLT     8                                80606960
0A89 0 D303              STO   3 OUT                              80606970
0A8A 0 7064              MDX     MARKX                            80606980
                         *                                        80606990
0A8B 0 C0E1      MARKB   LD      OUTWD                            80607000
0A8C 0 70FB              MDX     MARKA                            80607010
                         *                                        80607020
                         *                                        80607030
0A8D 0 6B05      MARK2   STX   3 MARKR&1                         80607040
0A8E 1 C400 0B47         LD    L F0200        SET UP TIME COUNTER 80607050
0A90 1 D400 0C8A         STO   L TIMEX                            80607060
0A92 0 6700 0000 MARKR   LDX   L3 /0000       RESTORE INDEX REGS  80607070
0A94 1 6500 0A92         LDX   L1 MARKR                           80607080
0A96 0 C302              LD    3 STS                              80607090
0A97 1 74FF 0C8A         MDX   L TIMEX,-1     DECR TIMER          80607100
0A99 0 7001              MDX     MARKQ                            80607110
0A9A 0 7002              MDX     MARKP                            80607120
0A9B 1 4C28 0C7E MARKQ   BSC   L PDSWX,&Z     BR IF NO INT YET    80607130
0A9D 1 C400 0960 MARKP   LD    L K8000        DESELECT PRINTER    80607140
0A9F 0 D302              STO   3 STS                              80607150
0AA0 1 74FF 09B9         MDX   L PRSEL,-1                         80607160
0AA2 0 1000              NOP                                      80607170
0AA3 0 6600 0001 RSADR   LDX   L2 1            RESTORE START ADDR  80607190
0AA5 0 7201      MARK3   MDX     2 1                              80607200
0AA6 0 D301              STO   3 RTN                              80607210
0AA7 1 6E80 0ABF         STX   I2 MARKL&1                         80607220
                         *                                        80607230
0AA9 1 C680 0C8A MARK4   LD    I2 FUNR-1                         80607240
0AAB 0 D304              STO   3 ITR                              80607250
                         *                                        80607260
0AAC 0 1810              SRA     16           RESTORE WORDS PT    80607270
0AAD 0 D307              STO   3 PAD                              80607280
                         *                                        80607290
0AAE 1 C600 0C8A MARK5   LD    L2 FUNR-1      RESTORE TEST PT     80607300
0AB0 1 F400 0C95         EOR   L FUND         CK FOR TERMINATOR   80607310
0AB2 1 4C18 0A8D         BSC   L MARK2,+-     BR IF TERMINATOR    80607320
0AB4 1 C600 0C8A         LD    L2 FUNR-1                          80607330
                         *                                        80607340
0AB6 0 8307              A     3 PAD                              80607350
0AB7 0 D300              STO   3 ADR                              80607360
                         *                                        80607370
0AB8 0 1810              SRA     16           RESTORE WORDS PRTD  80607380
0AB9 0 D306              STO   3 NOS                              80607390
                         *                                        80607400
0ABA 0 C0B1              LD      I            RESTORE SHIFT WORD  80607410
0ABB 0 D305              STO   3 SLT                              80607420
                         *                                        80607430
0ABC 0 6580 0000 MARKG   LDX   I1 /0000       RESTORE INDEX REGS  80607440
0ABE 0 6680 0000 MARKL   LDX   I2 /0000                          80607450
                         *                                        80607460
0AC0 0 C305              LD    3 SLT          BUMP SFF WD BY ONE  80607470
0AC1 0 80AA              A       I                                80607480
0AC2 0 D305              STO   3 SLT                              80607490
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                         *                                        80607500
0AC3 1 4C04 0AC7         BSC   L MARKS,E      SHIFT IF ODD        80607510
0AC5 0 C101              LD    1 1            FETCH OUTPUT WORD   80607520
0AC6 0 7008              MDX     MARKN                            80607530
                         *                                        80607540
0AC7 0 C306      MARKS   LD    3 NOS          BUMP WORDS BY ONE   80607550
0AC8 0 80A3              A       I                                80607560
0AC9 0 D306              STO   3 NOS                              80607570
                         *                                        80607580
0ACA 0 7101              MDX   1 1                                80607590
0ACB 1 6D80 0ABD         STX   I1 MARKG&1                         80607600
0ACD 0 C100              LD    1 0            FETCH OUTPUT CHAR   80607610
0ACE 0 1008              SLA     8            SHIFT IT            80607620
                         *                                        80607630
0ACF 0 D303      MARKN   STO   3 OUT          SAVE NEXT OUTPUT WD 80607640
                         *                                        80607650
0AD0 0 F032              EOR     KFF00                            80607660
0AD1 1 4C20 0AEF         BSC   L MARKX,Z      BR IF NOT END OF FCN 80607670
                         *                                        80607680
0AD3 0 C304              LD    3 ITR          DECREMENT ITCNT     80607690
0AD4 0 9097              S       I                                80607700
0AD5 0 D304              STO   3 ITR                              80607710
0AD6 1 4C20 0AAE         BSC   L MARK5,Z      BR IF NO DO AGAIN   80607720
                         *                                        80607730
0AD8 0 C306              LD    3 NOS          UPDATE MODIFIER WORD 80607740
0AD9 0 8092              A       I                                80607750
0ADA 0 D306              STO   3 NOS                              80607760
0ADB 0 8307              A     3 PAD                              80607770
0ADC 0 D307              STO   3 PAD                              80607780
                         *                                        80607790
                         *                                        80607800
                         *                                        80607810
0ADD 0 C101              LD    1 1            FETCH NEXT REPEAT CT 80607820
0ADE 0 D304              STO   3 ITR                              80607830
0ADF 0 F024              EOR     KFFFF                            80607840
0AE0 1 4C20 0AAE         BSC   L MARK5,Z      BR IF NOT END OF RTN 80607850
0AE2 1 C400 0803 MARKK   LD    L SW1                              80607860
0AE4 0 E021              AND     BASIC        ASSURE PROPER ENTRY 80607870
0AE5 1 4C18 0AA5         BSC   L MARK3,&-     BR IF NO RTN SELECT 80607880
                         *                                        80607890
0AE7 0 B01F              CMP     ALL                              80607900
0AE8 0 70BC              MDX     MARK3        BR IF RTN TOO LARGE 80607910
0AE9 0 1000              NOP                                      80607920
0AEA 0 8019              A       KFFFF        INITIALIZE RTN GIVEN 80607930
0AEB 0 D001              STO     *&1                              80607940
0AEC 0 6600 0001         LDX   L2 1                               80607950
0AEE 0 70B6              MDX     MARK3                            80607960
                         *                                        80607970
                         *                                        80607980
                         *                                        80607990
0AEF 1 6500 09E3 MARKX   LDX   L1 PRCON       SET RETURN ADDRESS  80608000
0AF1 1 6D00 0809         STX   L1 MLSCF                           80608010
0AF3 0 4C80 012D         BSC   I START                            80608020
                         ******************************************80608030
                         *                                        80608040
0AF5 0 10A0      READY   SLT     32                               80608050
0AF6 0 0B0A              XIO   3 PTR          SENSE - RESET DSW   80608060
0AF7 1 4420 088C         BSI   L DETE,Z       CHECK 1053 FOR 1816 80608070
0AF9 0 7026              MDX     TYPIT        DSW OK              80608080
                         *                                        80608090
0AFA 0 6101      RYDER   LDX     1 1          ERROR - NOT BUSY    80608100
0AFB 1 4400 0C30         BSI   L PRDSW                        MC  80608110
0AFD 1 6790 0C88         LDX     I3 PTRAD                         80608120
0AFF 0 C005              LD      KOC00                            80608130
0B00 0 D302              STO   3 STS                              80608140
0B01 1 4C00 0A00         BSC   L EXEC                             80608150
                         ******************************************80608160
                         *                                        80608170
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                        *
0B03 0 FF00             KFF00 DC      /FF00       CONSTANTS                80608180
0B04 0 FFFF             KFFFF DC      /FFFF                                80608190
0B05 0 0C00             KOC00 DC      /0C00                                80608200
0B06 0 000F             BASIC DC      /000F       BASIC ROUTINES           80608210
0B07 0 000A             ALL   DC      FUND-FUNR   ALL TYPEWRITER RTNS      80608220
0B08 0 0012             TIMEB DC      /0012       TIME TO LATCH CLUTCH     80608230
                        ********************************************       80608240
                        *                                                  80608250
                        *                PRINT INTERRUPT DSW ERROR         80608260
                        *                                                  80608270
                                                                           80608280
0B09 0 10A0             INERR SLT     32          RESET ERROR IND          80608290
0B0A 1 D400 09E2              STO   L ERIND                                80608300
0B0C 1 6700 0F38        INER0 LDX   L3 PTR8       WHICH PTR MADE ERROR     80608310
0B0E 0 6209                   LDX   2 9                                    80608320
0B0F 0 BB10             INER1 DCM   3 ERR                                  80608330
0B10 0 1000                   NOP                                          80608340
0B11 0 7005                   MDX     INER2       GOT IT - PRINT ERROR     80608350
0B12 0 73EE                   MDX   3 -18                                  80608360
0B13 0 72FF                   MDX   2 -1                                   80608370
0B14 0 70FA                   MDX     INER1       CHECK ALL PRINTERS       80608380
0B15 1 4C00 09E3              BSC   L PRCON       RETURN - NO MORE ERR     80608390
                        *                                                  80608400
0B17 0 CB10             INER2 LDD   3 ERR         PRINT INTRPT DSW         80608410
0B18 0 6103                   LDX   1 3           * ERROR                  80608420
0B19 1 4400 0C30              BSI   L PRDSW                                80608430
0B1B 1 6780 0C88              LDX   I3 PTRAD                               80608440
0B1D 0 10A0                   SLT     32                                   80608450
0B1E 0 DB10                   STD   3 ERR         RESET ERROR IND          80608460
0B1F 0 70EC                   MDX     INER0       RETURN TO CHECK  AGN     80608470
                        ********************************************       80608480
                        *                                                  80608490
                        *                PRINT ONE CHARACTER               80608500
                        *                                                  80608510
0B20 1 C400 0802        TYPIT LD    L   SWO         GET FUNCTIONS            80608520
0B22 1 4C10 0B33              BSC   L   TDLY6,-     BCH IF NO DELAY          80608530
0B24 0 C0E3                   LD        TIMEB       GET DELAY COUNT          80608540
0B25 1 D400 0C8A              STO   L   TIMEX       STORE IN COUNTER         80608550
                        *                                                  80608560
0B27 1 6500 0B2E        TDLY2 LDX   L1  TDLY4       GET RETURN               80608570
0B29 1 6D00 0809              STX   L1  MLSCF       * AND STORE IN TABLE     80608580
0B2B 0 6B03                   STX   3   TDLY4&1     SAVE XR 3                80608590
0B2C 0 4C80 012D              BSC   I   START       GO TO MONITOR            80608600
                        *                                                  80608610
0B2E 0 6700 0000        TDLY4 LDX   L3  *-*         RESTORE XR 3             80608620
0B30 1 74FF 0C8A              MDX   L   TIMEX,-1    REDUCE DELAY COUNT       80608630
0B32 0 70F4                   MDX       TDLY2                                80608640
                        *                                                  80608650
0B33 0 0B08             TDLY6 XIO     3 WRT         PRINT CHARACTER          80608660
0B34 0 0B0A                   XIO     3 PTR         SENSE - RESET DSW        80608670
0B35 0 D00C                   STO       DSWBY                                80608680
                        *                                                  80608690
                        *                     CHECK BUSY DSW               80608700
0B36 0 F0CE                   EOR       K0C00                                80608710
0B37 1 4420 088C              BSI   L   DETE,Z      CHECK 1053 FOR 1816      80608720
0B39 0 7006                   MDX       BSYOK       DSW OK                   80608730
                        *                                                  80608740
0B3A 0 C807             BSYER LDD       DSWBY       PRINT BUSY DSW ERROR     80608750
0B3B 0 6102                   LDX   1 2                                    80608760
0B3C 1 4400 0C30              BSI   L   PRDSW                          MC  80608770
0B3E 1 6780 0C88              LDX   I3  PTRAD                              80608780
0B40 1 4C00 0A6E        BSYOK BSC   L   MARK                               80608790
                        ********************************************       80608800
                        *                                                  80608810
                        *                                                  80608820
0B42    0000                  BSS   E   0                                  80608830
0B42 0 0000             DSWBY DC        /0000       LAST BUSY DSW            80608840
0B43 0 0C00             F0C00 DC        /0C00       BUSY DSW S/B             80608850
```



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0B44 0 0000             DSWAS DC        /0000       LAST READY DSW           80608860
0B45 0 0000                   DC        /0000                                80608870
0B46 0 0000             DSWBS DC        /0000                                80608880
0B47 0 0200             F0200 DC        /0200                                80608890
0B48 0 0000             DSWCS DC        /0000       STO PROT ERROR DSW       80608900
0B49 0 0100                   DC        /0100       DSW S/B                  80608910
                        ********************************************       80608920
                        *                                                  80608930
                        *                                                  80608940
                        *                PRINT NO INTERRUPT ERROR          80608950
                        *                                                  80608960
0B4A 1 C400 0960        NOIN  LD    L   K8000                              80608970
0B4C 0 18D0                   RTE       16                                 80608980
0B4D 0 0B0A                   XIO     3 PTR         SENSE - RESET DSW        80608990
0B4E 0 6104                   LDX     1 4                                  80609000
0B4F 1 4400 0C30              BSI   L   PRDSW                          MC  80609010
0B51 1 4C00 09E3              BSC   L   PRCON                              80609020
                        ********************************************       80609030
                        *                                                  80609040
                        *                KEYBOARD TEST                     80609050
                        *                                                  80609060
                        *                                                  80609070
                        *                SELECT KEYBOARD ROUTINE           80609080
                        *                                                  80609090
0B53 0 0B0A             SELC2 XIO     3 PTR         SENSE AND SAVE DSW       80609100
0B54 0 D0EF                   STO       DSWAS                                80609110
0B55 0 18CB                   RTE       11                                   80609120
0B56 1 4C04 09E3              BSC   L   PRCON,E     BR IF PTR BUSY           80609130
0B58 1 6500 0B5E              LDX   L1  SELC3                                80609140
0B5A 1 6D00 0809              STX   L1  MLSCF                                80609150
0B5C 0 4C80 012D              BSC   I   START                                80609160
                        *                                                  80609170
                        *                                                  80609180
0B5E 1 6780 0ABD        SELC3 LDX   I3  MARK&1                               80609190
0B60 0 C06A                   LD        KF000       RESET PTR STATUS         80609200
0B61 0 D302                   STO     3 STS                                  80609210
0B62 0 C8E1                   LDD       DSWAS                                80609220
0B63 1 4C18 0B67              BSC   L   SELC,&-     BR IF DSW OK             80609230
                        *                                                  80609240
0B65 0 6101                   LDX     1 1         PRINT DSW ERROR          80609250
0B66 0 7009                   MDX       SELC1                                80609260
0B67 0 0B0C             SELC  XIO     3 KEY         SELECT KEYBOARD          80609270
                        *                                                  80609280
0B68 0 0B0A                   XIO     3 PTR         SENSE - RESET DSW        80609290
0B69 0 D0DC                   STO       DSWBS                                80609300
0B6A 0 F0DC                   EOR       F0200                                80609310
0B6B 1 4C18 09E3              BSC   L   PRCON,&-     BR IF DSW OK             80609320
                        *                                                  80609330
0B6D 0 C8D8                   LDD       DSWBS       PRINT DSW ERROR          80609340
0B6E 0 6106                   LDX     1 6                                    80609350
0B6F 0 7000                   MDX       SELC1                                80609360
                        *                                                  80609370
0B70 1 4400 0C30        SELC1 BSI   L   PRDSW                          MC  80609380
0B72 1 6400 0A67              LDX   L   EXEC7       TRY AGAIN - LATER        80609390
                        ********************************************       80609400
                        *                                                  80609410
                        *                DECODE CHARACTER KEYED IN         80609420
                        *                                                  80609430
                        *                                                  80609440
0B74 0 0B0E             KEYBD XIO     3 SEE         READ AND SAVE CHAR       80609450
0B75 0 10A0                   SLT       32                                   80609460
0B76 0 0B0A                   XIO     3 PTR         SENSE - RESET DSW        80609470
0B77 1 4C18 0B7E              BSC   L   KEYPT,&-                             80609480
0B79 0 6107                   LDX     1 7         PRINT DSW ERROR          80609490
0B7A 1 4400 0C30              BSI   L   PRDSW                                80609500
0B7C 1 6780 0C88              LDX   I3  PTRAD                              80609510
                        *                                                  80609520
0B7E 0 C30C             KEYPT LD      3 KEY         SAVE KEY CHARACTER       80609530
```

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0B7F 0 D04C              STO     KEYCR                                  80609540
0B80 1 7400 080F         MDX  L  ONLIN,0     IS TEST ON-LINE            80609550
0B82 0 7002              MDX     *&2         * YES, NO STG PROT ERR     80609560
0B83 0 2F41 000C         STS  L3 KEY,/41     READ INTO STO PROT         80609570
0B85 0 0B0E              XIO   3 SEE                                    80609580
0B86 0 2F40 000C         STS  L3 KEY,/40     CLEAR STORAGE PROT         80609590
0B88 0 0B0A              XIO   3 PTR         SENSE - RESET DSW          80609600
0B89 0 D0BE              STO     DSWCS                                  80609610
0B8A 0 F0BE              EOR     DSWCS&1                                80609620
0B8B 1 4C18 0B93         BSC  L  KEYIN,&-    BR IF DSW OK               80609630
                         *                                              80609640
0B8D 0 C8BA              LDD     DSWCS       PRINT ERROR IN DSW         80609650
0B8E 0 6108              LDX   1 8                                      80609660
0B8F 1 4400 0C30         BSI  L  PRDSW                                  80609670
0B91 1 6780 0C88         LDX  I3 PTRAD                                  80609680
                         *                                              80609690
0B93 0 0B0E  KEYIN XIO   3 SEE       READ AGAIN IF CHECK                80609700
0B94 0 C037              LD      KEYCR                                  80609710
0B95 0 F30C              EOR   3 KEY                                    80609720
0B96 0 18D0              RTE     16                                     80609730
0B97 0 C034              LD      KEYCR                                  80609740
0B98 0 D30C              STO   3 KEY                                    80609750
0B99 0 18D0              RTE     16                                     80609760
0B9A 1 4C18 0BA2         BSC  L  WRDCT,&-    BR IF CHARS AGREE          80609770
0B9C 0 F02F              EOR     KEYCR                                  80609780
0B9D 0 6109              LDX   1 9                                      80609790
0B9E 1 4400 0C30         BSI  L  PRDSW       PRINT ERROR IN READ        80609800
0BA0 1 6780 0C88         LDX  I3 PTRAD                                  80609810
                         *                                              80609820
0BA2 0 6600 0000  WRDCT  LDX  L2 /0000                                  80609830
0BA4 0 61C0              LDX   1 -64                                    80609840
0BA5 1 C500 0D33  CNVRT  LD   L1 KECOD&64                               80609850
0BA7 0 F30C              EOR   3 KEY                                    80609860
0BA8 1 4C18 0BCD         BSC  L  CMPRE,&-    BR IF CHAR MATCHES         80609870
0BAA 0 7101              MDX   1 1                                      80609880
0BAB 0 70F9              MDX     CNVRT                                  80609890
                         *                                              80609900
0BAC 0 C30C              LD    3 KEY                                    80609910
0BAD 0 F016              EOR     NCAP                                   80609920
0BAE 1 4C18 0BC1         BSC  L  NOCP,&-     BR IF NO CAP NEXT          80609930
                         *                                              80609940
0BB0 0 C019              LD      K0008                                  80609950
0BB1 0 F30C              EOR   3 KEY                                    80609960
0BB2 1 4C18 0C10         BSC  L  ENDM,&-     BR IF END MESG             80609970
                         *                                              80609980
0BB4 0 C010              LD      ERSLC                                  80609990
0BB5 0 F30C              EOR   3 KEY                                    80610000
0BB6 1 4C18 0BF7         BSC  L  ERSE,&-     BR IF ERASE LAST CHR       80610010
                         *                                              80610020
0BB8 0 C30C              LD    3 KEY                                    80610030
0BB9 0 6105              LDX   1 5                                      80610040
0BBA 1 74FF 0C82         MDX  L  EMESG,-1                               80610050
0BBC 1 4400 0C30         BSI  L  PRDSW                                  80610060
0BBE 1 7401 0C82         MDX  L  EMESG,1                                80610070
0BC0 0 7092              MDX     SELC2                                  80610080
                         *                                              80610090
0BC1 0 6801  NOCP  STX   0 LOWER                                        80610100
0BC2 0 7090              MDX     SELC2                                  80610110
                         ********************************************** 80610120
                         *                                              80610130
                         *                                              80610140
0BC3 0 0000  LOWER DC    /0000       # 0 IF NEXT UPR CASE              80610150
0BC4 0 0002  NCAP  DC    /0002       ERASE FIRLD KEY CODE               80610160
0BC5 0 0004  ERSLC DC    /0004       BACKSPACE KEY CODE                 80610170
0BC6 0 0000  SLTWD DC    /0000       KEYBOARD SHIFT WORD                80610180
0BC7 0 FFE7  KFFE7 DC    -25                                            80610190
0BC8 0 0000  ERSEA DC    /0000                                          80610200
0BC9 0 1111  BSPSE DC    /1111       BACK SPACE                         80610210
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0BCA 0 0008  K0008 DC    /0008                                          80610220
0BCB 0 F000  KF000 DC    /F000                                          80610230
0BCC 0 0000  KEYCR DC    /0000                                          80610240
                         ********************************************** 80610250
                         *                                              80610260
                         *                PLACE CHAR KEYED IN           80610270
                         *                OUTPUT TABLE                  80610280
                         *                                              80610290
0BCD 1 C500 0D73  CMPRE LD   L1 TYCOD&64    FETCH PRINTER CHAR         80610300
0BCF 1 7400 0BC3         MDX  L  LOWER,0     SKIP IF UPPER CASE         80610310
0BD1 0 1808              SRA     8                                      80610320
0BD2 0 1008              SLA     8                                      80610330
0BD3 0 D303              STO   3 OUT         SAVE OUTPUT CHAR           80610340
                         *                                              80610350
0BD4 0 6100              LDX   1 0           RESET LOWER CASE SW        80610360
0BD5 0 69ED              STX   1 LOWER                                  80610370
                         *                                              80610380
0BD6 1 7400 0BC6         MDX  L  SLTWD,0     BR IF CHAR IS FIRST        80610390
0BD8 0 7004              MDX     SFT         * TO BE PLACED IN WD       80610400
                         *                                              80610410
0BD9 0 6121  NOSFT LDX   1 /0021                                        80610420
0BDA 0 7201              MDX   2 1           SKIP IF TABLE COMPLT       80610430
0BDB 0 7006              MDX     TBLIS                                  80610440
0BDC 0 7009              MDX     EXIT                                   80610450
                         *                                              80610460
0BDD 0 6100  SFT   LDX   1 0                                            80610470
0BDE 0 1808              SRA     8                                      80610480
0BDF 0 7000              MDX     TBLIZ                                  80610490
                         *                                              80610500
0BE0 1 EE00 0CB1  TBLIZ OR   L2 ANY&27      PLACE CHAR IN OUTPUT       80610510
0BE2 1 D600 0CB1  TBLIS STO  L2 ANY&27      * TABLE                    80610520
                         *                                              80610530
0BE4 0 69E1  TBLI  STX   1 SLTWD            SAVE TEST STATUS           80610540
0BE5 0 6ABD              STX   2 WRDCT&1                                80610550
0BE6 1 C400 0C89  EXIT   LD   L KE000                                   80610560
0BE8 0 D302              STO   3 STS         UPDATE PRTR STATUS         80610570
0BE9 0 10A0              SLT     32                                     80610580
0BEA 0 0B0A              XIO   3 PTR         SENSE - RESET DSW          80610590
0BEB 1 4C20 0AFA         BSC  L  RYDER,Z     BR IF NOT READY            80610600
                         *                                              80610610
0BED 0 0B08              XIO   3 WRT         PRINT ONE CHAR             80610620
0BEE 0 0B0A              XIO   3 PTR         SENSE - RESET DSW          80610630
0BEF 1 D400 0B42         STO  L  DSWBY                                  80610640
0BF1 1 F400 0B05         EOR  L  K0C00                                  80610650
0BF3 1 4C20 0B3A         BSC  L  BSYER,Z     BR IF NOT BUSY             80610660
0BF5 1 4C00 0AEF         BSC  L  MARKX       CONTINUE TILL INTRPT       80610670
                         ********************************************** 80610680
                         *                                              80610690
                         *              ERASE LAST CHARACTER            80610700
                         *                   KEYED IN                   80610710
                         *                                              80610720
0BF7 0 6AD0  ERSE  STX   2 ERSEA                                        80610730
0BF8 0 C0CF              LD      ERSEA                                  80610740
0BF9 0 F0CD              EOR     KFFE7                                  80610750
0BFA 1 4C18 0B53         BSC  L  SELC2,&-    BR IF TABLE EMPTY          80610760
                         *                                              80610770
0BFC 0 C0C9              LD      SLTWD                                  80610780
0BFD 1 4C20 0C07         BSC  L  ERSE1,Z     BR IF NOT SHIFTED          80610790
0BFF 0 6121              LDX   1 /0021       ERASE SHIFTED CHAR         80610800
0C00 1 C600 0CB1         LD    L2 ANY&27                                80610810
0C02 0 1808              SRA     8                                      80610820
0C03 0 1008              SLA     8                                      80610830
0C04 1 D600 0CB1         STO   L2 ANY&27                                80610840
0C06 0 7006              MDX     ERSE2                                  80610850
                         *                                              80610860
0C07 0 1010  ERSE1 SLA   16                                             80610870
0C08 0 6100              LDX   1 0                                      80610880
0C09 0 72FF              MDX   2 -1                                     80610890
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0C0A 0 1000              NOP                                          80610900
0C0B 1 D600 0CB2         STO  L2 ANY&28                               80610910
0C0D 0 C0BB       ERSE2  LD      BSPSE      SET BACKSPACE CODE       80610920
0C0E 0 D303              STO   3 OUT        * IN OUTPUT WORD         80610930
0C0F 0 70D4              MDX     TBLI                                 80610940
                  ********************************************       80610950
                  *                                                  80610960
                  *                TERMINATE MESSAGE ROUTINE         80610970
                  *                                                  80610980
0C10 1 C400 0C99  ENDM   LD   L  ANY&3                                80610990
0C12 1 6680 0BA3         LDX  I2 WRDCT&1                              80611000
0C14 1 4C18 0C25         BSC  L  ENDM2,&-   BR IF TABLE EMPTY         80611010
0C16 0 C0AF              LD      SLTWD                                80611020
0C17 1 4C18 0C1D         BSC  L  ENDM1,&-   BR IF LAST SHIFTED        80611030
0C19 1 EE00 0CB1         OR   L2 ANY&27                               80611040
0C1B 1 D600 0CB1         STO  L2 ANY&27                               80611050
                  *                                                  80611060
0C1D 1 C400 0D83  ENDM1  LD   L  RED1       SET TABLE TERMINATOR     80611070
0C1F 1 D600 0CB2         STO  L2 ANY&28                               80611080
0C21 0 C073              LD      FUND                                 80611090
0C22 1 D600 0CB3         STO  L2 ANY&29                               80611100
0C24 0 7002              MDX     ENDM3                                80611110
                  *                                                  80611120
0C25 0 C06F       ENDM2  LD      FUND       SET TABLE TERMINATOR     80611130
0C26 0 D071              STO     ANY&2                                80611140
                  *                                                  80611150
0C27 0 C0A2       ENDM3  LD      K0008      RESTORE PTR RTN          80611160
0C28 0 D302              STO   3 STS                                  80611170
                  *                                                  80611180
                  *                                                  80611190
0C29 0 6200              LDX   2 0                                    80611200
0C2A 1 6E00 0AA4         STX  L2 RSADR&1                              80611210
0C2C 1 6E00 0803         STX  L2 SW1                                  80611220
                  *                                                  80611230
0C2E 1 4C00 0AE2         BSC  L  MARKK      RESTART PRINTER           80611240
                  ********************************************       80611250
                  *                                                  80611260
                  *                PRINT ERROR ROUTINE               80611270
                  *                                                  80611280
0C30 0 0000       PRDSW  DC      /0000                          ME    80611290
                  *                                                  80611300
0C31 0 D854              STD     EMESG&4    SAVE DATA WAS & S/B       80611310
0C32 0 6951              STX   1 EMESG&2    SAVE MESSAGE NUMBER       80611320
0C33 0 C050              LD      EMESG&2                              80611330
0C34 0 E854              OR      KE000                                80611340
0C35 0 D04E              STO     EMESG&2                              80611350
                  *                                                  80611360
0C36 0 6B51              STX   3 PTRAD      SET UP MESG ID NO         80611370
0C37 0 C30A              LD    3 PTR                                  80611380
0C38 0 1008              SLA     8                                    80611390
0C39 0 1808              SRA     8                                    80611400
0C3A 0 D04A              STO     EMESG&3                              80611410
                  *                                                  80611420
0C3B 0 C301              LD    3 RTN        FETCH RTN NO              80611430
0C3C 1 D400 0800         STO  L  RID                                  80611440
                  *                                                  80611450
0C3E 1 C400 0803         LD   L  SW1                                  80611460
0C40 1 E400 0B06         AND  L  BASIC      REMOVE BAD BITS           80611470
0C42 1 B400 0A30         CMP  L  ELVEN      BR IF ROUTINE ELEVEN      80611480
0C44 0 1000              NOP                                          80611490
0C45 0 7002              MDX     ERDLY                                80611500
                  *                                                  80611510
0C46 1 D400 0800         STO  L  RID        SET ROUTINE NO            80611520
                  *                                                  80611530
0C48 1 C400 0B47  ERDLY  LD   L  F0200      SET UP DELAY COUNTER      80611540
0C4A 0 D03F              STO     TIMEX                                80611550
0C4B 1 C400 0EAA  RELCK  LD   L  PTRO&STS                             80611560
0C4D 0 F03B              EOR     KE000                                80611570
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0C4E 0 4818              BSC     &-         BR IF WAIT FOR INT        80611580
0C4F 0 C02E              LD      PDSWX                                80611590
0C50 0 1004              SLA     4                                    80611600
0C51 1 4C10 0C56         BSC  L  CXREL,-    BR IF INTRPT RECD         80611610
0C53 1 74FF 0C8A         MDX  L  TIMEX,-1   FALL THRU IF TIME UP      80611620
0C55 0 7023              MDX     TIME1                                80611630
0C56 1 C400 0811  CXREL  LD   L  DDEF0                                80611640
0C58 1 4C10 0C5E         BSC  L  ERDSW,-    BR IF PTR 0 RELEASED      80611650
                  ********************************************       80611660
0C5A 0 4480 0132         BSI  I  RELDV                         *      80611670
0C5C 1 0811              DC      DDEF0                         *      80611680
0C5D 1 080A              DC      TERM                          *      80611690
                  ********************************************       80611700
0C5E 0 4480 0130  ERDSW  BSI  I  ERROR                         * SC   80611710
0C60 1 0C82              DC      EMESG      MESSAGE ADDR       *      80611720
0C61 1 0C7C              DC      CKDSX      BUSY RETURN ADDR   *      80611730
0C62 1 0C63              DC      FRLOP      LOOP ON ERROR ADDR *      80611740
                  ********************************************       80611750
0C63 1 6500 0C66  FRLOP  LDX  L1 ERDOO                                80611760
0C65 0 7018              MDX     PDSWX      EXIT TO MONITOR           80611770
0C66 1 6580 0C30  ERDOO  LDX  I1 PRDSW      RETURN TO TPR PROG        80611780
0C68 1 C400 0811         LD   L  DDEF0                                80611790
0C6A 1 4C18 0C7E         BSC  L  PDSWX,&-   BR IF NO PTR ZERO         80611800
                  ********************************************       80611810
0C6C 1 7401 081C         MDX  L  INTSW,1    SET INTR SW               80611820
0C6E 0 1000              NOP                                          80611830
0C6F 0 4480 0131  ERGET  BSI  I  REQDV      REQ MON LOG DEV    *      80611840
0C71 1 0C76              DC      ERBUY      BUSY RETURN        *      80611850
0C72 1 0811              DC      DDEF0                         *      80611860
0C73 1 081D              DC      DVA0                          *      80611870
0C74 1 080A              DC      TERM                          *      80611880
                  ********************************************       80611890
0C75 0 7008              MDX     PDSWX                                80611900
                  *                                                  80611910
0C76 1 6500 0C66  ERBUY  LDX  L1 ERDOO      TRY AGAIN - LATER         80611920
0C78 0 7005              MDX     PDSWX                                80611930
                  *                                                  80611940
0C79 1 6500 0C4B  TIME1  LDX  L1 RELCK                                80611950
0C7B 0 7002              MDX     PDSWX                                80611960
                  *                                                  80611970
0C7C 1 6500 0C5E  CKDSX  LDX  L1 ERDSW      BUSY RETURN TO CALL       80611980
0C7E 1 6D00 0809  PDSWX  STX  L1 MLSCF                                80611990
0C80 0 4C80 012D         BSC  I  START                         MX     80612000
                  *                                                  80612010
0C82   0000              BSS  E  0                                    80612020
0C82 0 0003       EMESG  DC      3          WORD COUNT                80612030
0C83 0 0000              DC      /0000      HEX     OUTPUT            80612040
0C84 0 0000              DC      /0000      MESSAGE ID NO             80612050
0C85 0 0000              DC      /0000      PRINTER NUMBER            80612060
0C86 0 0000              DC      /0000      DSWAS                     80612070
0C87 0 0000              DC      /0000      DSW S/B                   80612080
                  *                                                  80612090
                  *                                                  80612100
0C88 0 0000       PTRAD  DC      /0000      PRINTER ADRS              80612110
0C89 0 E000       KE000  DC      /E000      ERROR ID                  80612120
0C8A 0 0000       TIMEX  DC      /0000      DELAY TIME  STORAGE       80612130
                  ********************************************       80612140
                  *                                                  80612150
                  *              PRINTER TEST SEQUENCE               80612160
                  *                   CONTROL TABLE                  80612170
                  *                                                  80612180
0C8B 1 0C96       FUNR   DC      ANY        KEYBOARD OPTION           80612190
0C8C 1 0D73              DC      TACAR      TAB & CARRIER RETURN      80612200
0C8D 1 0D85              DC      UCASE      UPPER CASE CHARS          80612210
0C8E 1 0DA2              DC      LCASE      LOWER CASE CHARS          80612220
0C8F 1 0DBF              DC      COLOR      COLOR SHIFT ROUTINE       80612230
0C90 1 0DD5              DC      SPNDX      BACKSPACE AND INDEX       80612240
0C91 1 0DF4              DC      AUCAR      AUTO CARRIER RETURN       80612250
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0C92 1 0E0D              DC      ROCK        TEST TILT                    80612260
0C93 1 0E40              DC      ROLL        TEST ROTATE                  80612270
0C94 1 0E73              DC      TWIST       TEST TILT AND ROTATE         80612280
0C95 0 FFFF       FUND   DC      /FFFF                                    80612290
                  ********************************************           80612300
                  *                                                      80612310
                  *                KEYBOARD OPTION TABLE                 80612320
                  *                                                      80612330
0C96 0 0001       ANY    DC      1           ITCNT                        80612340
0C97 0 05FF              DC      /05FF       BLACK                        80612350
0C98 0 FFFF              DC      /FFFF       ITCNT                        80612360
0C99 0 0000              DC      /0000                                    80612370
0C9A 0 0000              DC      /0000                                    80612380
0C9B 0 0000              DC      /0000                                    80612390
0C9C 0 0000              DC      /0000                                    80612400
0C9D 0 0000              DC      /0000                                    80612410
0C9E 0 0000              DC      /0000                                    80612420
0C9F 0 0000              DC      /0000                                    80612430
0CA0 0 0000              DC      /0000                                    80612440
0CA1 0 0000              DC      /0000                                    80612450
0CA2 0 0000              DC      /0000                                    80612460
0CA3 0 0000              DC      /0000                                    80612470
0CA4 0 0000              DC      /0000                                    80612480
0CA5 0 0000              DC      /0000                                    80612490
0CA6 0 0000              DC      /0000                                    80612500
0CA7 0 0000              DC      /0000                                    80612510
0CA8 0 0000              DC      /0000                                    80612520
0CA9 0 0000              DC      /0000                                    80612530
0CAA 0 0000              DC      /0000                                    80612540
0CAB 0 0000              DC      /0000                                    80612550
0CAC 0 0000              DC      /0000                                    80612560
0CAD 0 0000              DC      /0000                                    80612570
0CAE 0 0000              DC      /0000                                    80612580
0CAF 0 0000              DC      /0000                                    80612590
0CB0 0 0000              DC      /0000                                    80612600
0CB1 0 0000              DC      /0000                                    80612610
0CB2 0 FFFF              DC      /FFFF                                    80612620
                  ********************************************           80612630
                  *                                                      80612640
                  *                                                      80612650
                  *                END PROGRAM ROUTINE                   80612660
                  *                                                      80612670
0CB3 0 C044       TYEND  LD      KECOD&5     SET UP DELAY COUNTER         80612680
0CB4 0 0DD5              STO     TIMEX                                    80612690
                  *                                                      80612700
0CB5 1 6500 0CB5  AWAIT  LDX  L1 AWAIT       SET RETURN ADDRESS           80612710
0CB7 1 74FF 0C8A         MDX  L  TIMEX,-1    DECREMENT COUNTER            80612720
0CB9 0 70C4              MDX     PDSWX                                    80612730
                  *                                                      80612740
                  ********************************************           80612750
0CBA 0 4C80 012E         BSC  I  END                                 * SC 80612760
                  ********************************************           80612770
                  *                                                      80612780
                  *                                                      80612790
0CBC 0 0000       TEND   DC      /0000                                    80612800
0CBD 0 1010              SLA     16                                       80612810
0CBE 1 D400 0803         STO  L  SW1                                      80612820
0CC0 0 6500 FFFF         LDX  L1 -1          RESET KEYIN OPTION           80612830
0CC2 0 69D5              STX     1 ANY&2                                  80612840
                  *                                                      80612850
0CC3 0 6101              LDX     1 1                                      80612860
0CC4 1 6D00 0AA4         STX  L1 RSADR&1                                  80612870
0CC6 1 6700 0F38         LDX  L3 PTR8        RESTORE PTRS RESTART         80612880
0CC8 0 6109              LDX     1 9                                      80612890
0CC9 1 C400 08F6  TEND1  LD   L  II                                       80612900
0CCB 0 D301              STO     3 RTN                                    80612910
0CCC 1 C400 0C8C         LD   L  FUNR&1                                   80612920
0CCE 0 D300              STO     3 ADR                                    80612930
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0CCF 1 C400 0D74         LD   L  TACAR&1                                  80612940
0CD1 0 D303              STO     3 OUT                                    80612950
0CD2 0 C0C3              LD      ANY                                      80612960
0CD3 0 D304              STO     3 ITR                                    80612970
0CD4 0 D305              STO     3 SLT                                    80612980
0CD5 0 1801              SRA     1                                        80612990
0CD6 0 D306              STO     3 NOS                                    80613000
0CD7 0 D307              STO     3 PAD                                    80613010
0CD8 0 73EE              MDX     3 -18                                    80613020
0CD9 0 71FF              MDX     1 -1                                     80613030
0CDA 0 70EE              MDX     TEND1                                    80613040
                  ********************************************           80613050
0CDB 0 4480 0132         BSI  I  RELDV       RELEASE ALL PTRS         *  80613060
0CDD 0 700B       TEND3  MDX     TEND2                                *  80613070
0CDE 0 700A              MDX     TEND2                                *  80613080
0CDF 0 7009              MDX     TEND2                                *  80613090
0CE0 0 7008              MDX     TEND2                                *  80613100
0CE1 0 7007              MDX     TEND2                                *  80613110
0CE2 0 7006              MDX     TEND2                                *  80613120
0CE3 0 7005              MDX     TEND2                                *  80613130
0CE4 0 7004              MDX     TEND2                                *  80613140
0CE5 0 7003              MDX     TEND2                                *  80613150
0CE6 0 7002              MDX     TEND2                                *  80613160
0CE7 0 7001              MDX     TEND2                                *  80613170
0CE8 1 080A              DC      TERM                                 *  80613180
                  ********************************************           80613190
                  *                                                      80613200
0CE9 1 C400 081B  TEND2  LD   L  DDEFX       GET SAVED DDEF               80613210
0CEB 1 D400 0811         STO  L  DDEF0       * AND RESTORE SW2            80613220
0CED 1 C400 08F8         LD   L  SWSTG                                    80613230
0CEF 1 D400 0804         STO  L  SW2                                      80613240
0CF1 1 4C80 0CBC         BSC  I  TEND                                     80613250
                  ********************************************           80613260
                  *                                                      80613270
                  *                KEYBOARD CODE TABLE                   80613280
                  *                                                      80613290
0CF3 0 4220       KECOD  DC      /4220       *                            80613300
0CF4 0 3000              DC      /3000       /                            80613310
0CF5 0 2000              DC      /2000       0                            80613320
0CF6 0 1000              DC      /1000       1                            80613330
0CF7 0 0800              DC      /0800       2                            80613340
0CF8 0 0400              DC      /0400       3                            80613350
0CF9 0 0200              DC      /0200       4                            80613360
0CFA 0 0100              DC      /0100       5                            80613370
0CFB 0 0080              DC      /0080       6                            80613380
0CFC 0 0040              DC      /0040       7                            80613390
0CFD 0 0020              DC      /0020       8                            80613400
0CFE 0 0010              DC      /0010       9                            80613410
0CFF 0 4420              DC      /4420       $                            80613420
0D00 0 8420              DC      /8420       .                            80613430
0D01 0 2420              DC      /2420       ,                            80613440
0D02 0 00A0              DC      /00A0       #                            80613450
0D03 0 0120              DC      /0120       @                            80613460
0D04 0 8120              DC      /8120       %                            80613470
0D05 0 4120              DC      /4120       ¤                            80613480
0D06 0 80A0              DC      /80A0       &                            80613490
0D07 0 4000              DC      /4000       -                            80613500
0D08 0 8820              DC      /8820       CENT SIGN                    80613510
0D09 0 8220              DC      /8220       LESS THAN                    80613520
0D0A 0 8060              DC      /8060       LOGICAL OR                   80613530
0D0B 0 8000              DC      /8000       AND                          80613540
0D0C 0 4820              DC      /4820       EXCLAIMATION                 80613550
0D0D 0 40A0              DC      /40A0       SEMI COLUN                   80613560
0D0E 0 4060              DC      /4060       LOGICAL NOT                  80613570
0D0F 0 2220              DC      /2220       PER CENT                     80613580
0D10 0 2120              DC      /2120       UNDERSCORE                   80613590
0D11 0 20A0              DC      /20A0       GREATER THAN                 80613600
0D12 0 2060              DC      /2060       QUESTION MARK                80613610
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0D13 0 0820          DC    /0820    COLON                80613620
0D14 0 0420          DC    /0420    NUMBERS              80613630
0D15 0 0220          DC    /0220    AT                   80613640
0D16 0 0060          DC    /0060    QUOTE                80613650
0D17 0 9000          DC    /9000    A                    80613660
0D18 0 8800          DC    /8800    B                    80613670
0D19 0 8400          DC    /8400    C                    80613680
0D1A 0 8200          DC    /8200    D                    80613690
0D1B 0 8100          DC    /8100    E                    80613700
0D1C 0 8080          DC    /8080    F                    80613710
0D1D 0 8040          DC    /8040    G                    80613720
0D1E 0 8020          DC    /8020    H                    80613730
0D1F 0 8010          DC    /8010    I                    80613740
0D20 0 5000          DC    /5000    J                    80613750
0D21 0 4800          DC    /4800    K                    80613760
0D22 0 4400          DC    /4400    L                    80613770
0D23 0 4200          DC    /4200    M                    80613780
0D24 0 4100          DC    /4100    N                    80613790
0D25 0 4080          DC    /4080    O                    80613800
0D26 0 4040          DC    /4040    P                    80613810
0D27 0 4020          DC    /4020    Q                    80613820
0D28 0 4010          DC    /4010    R                    80613830
0D29 0 2800          DC    /2800    S                    80613840
0D2A 0 2400          DC    /2400    T                    80613850
0D2B 0 2200          DC    /2200    U                    80613860
0D2C 0 2100          DC    /2100    V                    80613870
0D2D 0 2080          DC    /2080    W                    80613880
0D2E 0 2040          DC    /2040    X                    80613890
0D2F 0 2020          DC    /2020    Y                    80613900
0D30 0 2010          DC    /2010    Z                    80613910
0D31 0 0000          DC    /0000    SPACE                80613920
0D32 0 2820          DC    /2820    0 - 8 - 2            80613930
                     *                                   80613940
                     *        PRINTER CODE TABLE         80613950
                     *                                   80613960
0D33 0 D6D6    TYCOD DC    /D6D6    *                    80613970
0D34 0 BCBC          DC    /BCBC    /                    80613980
0D35 0 C4C4          DC    /C4C4    0                    80613990
0D36 0 FCFC          DC    /FCFC    1                    80614000
0D37 0 D8D8          DC    /D8D8    2                    80614010
0D38 0 DCDC          DC    /DCDC    3                    80614020
0D39 0 F0F0          DC    /F0F0    4                    80614030
0D3A 0 F4F4          DC    /F4F4    5                    80614040
0D3B 0 D0D0          DC    /D0D0    6                    80614050
0D3C 0 D4D4          DC    /D4D4    7                    80614060
0D3D 0 E4E4          DC    /E4E4    8                    80614070
0D3E 0 E0E0          DC    /E0E0    9                    80614080
0D3F 0 4040          DC    /4040    $                    80614090
0D40 0 0000          DC    /0000    .                    80614100
0D41 0 8080          DC    /8080    ,                    80614110
0D42 0 C2C2          DC    /C2C2    #                    80614120
0D43 0 E6E6          DC    /E6E6    @                    80614130
0D44 0 FEFE          DC    /FEFE    %                    80614140
0D45 0 F6F6          DC    /F6F6    ¤                    80614150
0D46 0 DADA          DC    /DADA    £                    80614160
0D47 0 8484          DC    /8484    -                    80614170
0D48 0 0202          DC    /0202    CENTS SIGN           80614180
0D49 0 DEDE          DC    /DEDE    LESS THAN            80614190
0D4A 0 C6C6          DC    /C6C6    LOGICAL OR           80614200
0D4B 0 4444          DC    /4444    AND                  80614210
0D4C 0 4242          DC    /4242    EXCLAIMATION         80614220
0D4D 0 D2D2          DC    /D2D2    SEMI COLON           80614230
0D4E 0 F2F2          DC    /F2F2    LOGICAL NOT          80614240
0D4F 0 0606          DC    /0606    PERCENT SIGN         80614250
0D50 0 BEBE          DC    /BEBE    UNDERSCORE           80614260
0D51 0 4646          DC    /4646    GREATER THAN         80614270
0D52 0 8686          DC    /8686    QUESTION MARK        80614280
0D53 0 8282          DC    /8282    COLON                80614290
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0D54 0 C0C0          DC    /C0C0    NUMBERS              80614300
0D55 0 0404          DC    /0404    AT                   80614310
0D56 0 E2E2          DC    /E2E2    QUOTE                80614320
0D57 0 3C3E          DC    /3C3E    A                    80614330
0D58 0 181A          DC    /181A    B                    80614340
0D59 0 1C1E          DC    /1C1E    C                    80614350
0D5A 0 3032          DC    /3032    D                    80614360
0D5B 0 3436          DC    /3436    E                    80614370
0D5C 0 1012          DC    /1012    F                    80614380
0D5D 0 1416          DC    /1416    G                    80614390
0D5E 0 2426          DC    /2426    H                    80614400
0D5F 0 2022          DC    /2022    I                    80614410
0D60 0 7C7E          DC    /7C7E    J                    80614420
0D61 0 585A          DC    /585A    K                    80614430
0D62 0 5C5E          DC    /5C5E    L                    80614440
0D63 0 7072          DC    /7072    M                    80614450
0D64 0 7476          DC    /7476    N                    80614460
0D65 0 5052          DC    /5052    O                    80614470
0D66 0 5456          DC    /5456    P                    80614480
0D67 0 6466          DC    /6466    Q                    80614490
0D68 0 6062          DC    /6062    R                    80614500
0D69 0 989A          DC    /989A    S                    80614510
0D6A 0 9C9E          DC    /9C9E    T                    80614520
0D6B 0 B0B2          DC    /B0B2    U                    80614530
0D6C 0 B4B6          DC    /B4B6    V                    80614540
0D6D 0 9092          DC    /9092    W                    80614550
0D6E 0 9496          DC    /9496    X                    80614560
0D6F 0 A4A6          DC    /A4A6    Y                    80614570
0D70 0 A0A2          DC    /A0A2    Z                    80614580
0D71 0 2121          DC    /2121    SPACE                80614590
0D72 0 0303          DC    /0303    LINE FEED            80614600
                     *                                   80614610
                     *                                   80614620
                     *      TAB AND CARRIER RETURN       80614630
                     *                                   80614640
0D73 0 0001    TACAR DC    1        ITCNT                80614650
0D74 0 2181          DC    /2181    SP CR                80614660
0D75 0 05FF          DC    /05FF    BLACK                80614670
0D76 0 0002          DC    2        ITCNT                80614680
0D77 0 811E          DC    /811E    CR  C                80614690
0D78 0 3C60          DC    /3C60    A   R                80614700
0D79 0 6020          DC    /6020    R   I                80614710
0D7A 0 3460          DC    /3460    E   R                80614720
0D7B 0 2160          DC    /2160        R                80614730
0D7C 0 349C          DC    /349C    E   T                80614740
0D7D 0 B060          DC    /B060    U   R                80614750
0D7E 0 7441          DC    /7441    N   TAB              80614760
0D7F 0 9E3C          DC    /9E3C    T   A                80614770
0D80 0 18B0          DC    /18B0    B   U                80614780
0D81 0 5C3C          DC    /5C3C    L   A                80614790
0D82 0 9C34          DC    /9C34    T   E                80614800
0D83 0 09FF    RED1  DC    /09FF    RED                  80614810
0D84 0 FFFF          DC    /FFFF                         80614820
                     *                                   80614830
                     *                                   80614840
                     *      CHARACTER COMPLIMENT         80614850
                     *                                   80614860
                     *                                   80614870
                     *                                   80614880
0D85 0 0001    UCASE DC    1        ITCNT                80614890
0D86 0 2181          DC    /2181    SP CR                80614900
0D87 0 05FF          DC    /05FF    BLACK                80614910
0D88 0 0002          DC    2        ITCNT                80614920
0D89 0 813E          DC    /813E    CR  A                80614930
0D8A 0 1A1E          DC    /1A1E    B   C                80614940
0D8B 0 3236          DC    /3236    D   E                80614950
0D8C 0 1216          DC    /1216    F   G                80614960
0D8D 0 2622          DC    /2622    H   I                80614970
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0D8E 0 7E5A             DC      /7E5A       J   K           80614980
0D8F 0 5E72             DC      /5E72       L   M           80614990
0D90 0 7652             DC      /7652       N   O           80615000
0D91 0 5666             DC      /5666       &   Q           80615010
0D92 0 629A             DC      /629A       R   S           80615020
0D93 0 9EB2             DC      /9EB2       T   U           80615030
0D94 0 B692             DC      /B692       V   W           80615040
0D95 0 96A6             DC      /96A6       X   Y           80615050
0D96 0 A221             DC      /A221       Z   SP          80615060
0D97 0 FEDA             DC      /FEDA       %   &           80615070
0D98 0 DEF2             DC      /DEF2       LES INT         80615080
0D99 0 F6D2             DC      /F6D2       ¤   SMI         80615090
0D9A 0 D6E6             DC      /D6E6       *   @           80615100
0D9B 0 E2C6             DC      /E2C6       QTE LOR         80615110
0D9C 0 C2BE             DC      /C2BE       @   UDR         80615120
0D9D 0 8682             DC      /8682       QSN CLN         80615130
0D9E 0 4642             DC      /4642       GTR EXC         80615140
0D9F 0 0602             DC      /0602       PCT CNT         80615150
0DA0 0 09FF             DC      /09FF       RED             80615160
0DA1 0 FFFF             DC      /FFFF                       80615170
                        *                                   80615180
                        *           LOWER CASE              80615190
                        *                                   80615200
0DA2 0 0001     LCASE   DC      1           ITCNT           80615210
0DA3 0 2181             DC      /2181       SP CR           80615220
0DA4 0 05FF             DC      /05FF       BLACK           80615230
0DA5 0 0002             DC      2           ITCNT           80615240
0DA6 0 813C             DC      /813C       CR  A           80615250
0DA7 0 181C             DC      /181C       B   C           80615260
0DA8 0 3034             DC      /3034       D   E           80615270
0DA9 0 1014             DC      /1014       F   G           80615280
0DAA 0 2420             DC      /2420       H   I           80615290
0DAB 0 7C58             DC      /7C58       J   K           80615300
0DAC 0 5C70             DC      /5C70       L   M           80615310
0DAD 0 7450             DC      /7450       N   O           80615320
0DAE 0 5464             DC      /5464       P   Q           80615330
0DAF 0 6098             DC      /6098       R   S           80615340
0DB0 0 9CB0             DC      /9CB0       T   U           80615350
0DB1 0 B490             DC      /B490       V   W           80615360
0DB2 0 94A4             DC      /94A4       X   Y           80615370
0DB3 0 A021             DC      /A021       Z   SP          80615380
0DB4 0 FCD8             DC      /FCD8       1   2           80615390
0DB5 0 DCF0             DC      /DCF0       3   4           80615400
0DB6 0 F4D0             DC      /F4D0       5   6           80615410
0DB7 0 D4E4             DC      /D4E4       7   8           80615420
0DB8 0 E0C4             DC      /E0C4       9   0           80615430
0DB9 0 C0BC             DC      /C0BC       NOS /           80615440
0DBA 0 8480             DC      /8480       -   ,           80615450
0DBB 0 4440             DC      /4440       AND $           80615460
0DBC 0 0400             DC      /0400       AT  .           80615470
0DBD 0 09FF             DC      /09FF       RED             80615480
0DBE 0 FFFF             DC      /FFFF                       80615490
                        *                                   80615500
                        *                                   80615510
                        *           COLOR SHIFT             80615520
                        *                                   80615530
0DBF 0 0002     COLOR   DC      2           ITCNT           80615540
0DC0 0 81FF             DC      /81FF       RED             80615550
0DC1 0 0014             DC      20          ITCNT           80615560
0DC2 0 0952             DC      /0952       RED O           80615570
0DC3 0 1105             DC      /1105       BSP BLK         80615580
0DC4 0 DA21             DC      /DA21       +   SP          80615590
0DC5 0 21FF             DC      /21FF       SP              80615600
0DC6 0 003B             DC      59          ITCNT           80615610
0DC7 0 11FF             DC      /11FF       BSP             80615620
0DC8 0 0014             DC      20          ITCNT           80615630
0DC9 0 0952             DC      /0952       RED O           80615640
0DCA 0 1105             DC      /1105       BSP BLK         80615650
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0DCB 0 DA21             DC      /DA21       +   SP          80615660
0DCC 0 21FF             DC      /21FF       SP              80615670
0DCD 0 003B             DC      59          ITCNT           80615680
0DCE 0 11FF             DC      /11FF       BSP             80615690
0DCF 0 0014             DC      20          ITCNT           80615700
0DD0 0 0952             DC      /0952       RED O           80615710
0DD1 0 1105             DC      /1105       BSP BLK         80615720
0DD2 0 DA21             DC      /DA21       +   SP          80615730
0DD3 0 21FF             DC      /21FF       SP              80615740
0DD4 0 FFFF             DC      /FFFF                       80615750
                        *                                   80615760
                        *                                   80615770
                        *           BACK SPACE AND INDEX    80615780
                        *                                   80615790
0DD5 0 0001     SPNDX   DC      1           ITCNT           80615800
0DD6 0 2181             DC      /2181       SP  CR          80615810
0DD7 0 05FF             DC      /05FF       BLACK           80615820
0DD8 0 0002             DC      2           ITCNT           80615830
0DD9 0 8141             DC      /8141       CR  TAB         80615840
0DDA 0 3611             DC      /3611       E   *           80615850
0DDB 0 111E             DC      /111E       *   C           80615860
0DDC 0 1111             DC      /1111       *   *           80615870
0DDD 0 3E11             DC      /3E11       A   *           80615880
0DDE 0 1156             DC      /1156       *   P           80615890
0DDF 0 1111             DC      /1111       *   *           80615900
0DE0 0 9A11             DC      /9A11       S   *           80615910
0DE1 0 1111             DC      /1111       *   *           80615920
0DE2 0 5A11             DC      /5A11       K   *           80615930
0DE3 0 111E             DC      /111E       *   C           80615940
0DE4 0 1111             DC      /1111       *   *           80615950
0DE5 0 3E11             DC      /3E11       A   *           80615960
0DE6 0 111A             DC      /111A       *   B           80615970
0DE7 0 8141             DC      /8141       CR  TAB         80615980
0DE8 0 2211             DC      /2211       I   BSP         80615990
0DE9 0 0376             DC      /0376       LNF N           80616000
0DEA 0 1103             DC      /1103       BSP LNF         80616010
0DEB 0 3203             DC      /3203       D   LNF         80616020
0DEC 0 1136             DC      /1136       BSP E           80616030
0DED 0 0311             DC      /0311       LNF BSP         80616040
0DEE 0 9603             DC      /9603       X   LNF         80616050
0DEF 0 1109             DC      /1109       BSP RED         80616060
0DF0 0 81FF             DC      /81FF       CR              80616070
0DF1 0 0001             DC      1           ITCNT           80616080
0DF2 0 81FF             DC      /81FF       CR              80616090
0DF3 0 FFFF             DC      /FFFF                       80616100
                        *                                   80616110
                        *                                   80616120
                        * AUTOMATIC CARRIER RETURN *        80616130
                        *                                   80616140
0DF4 0 0001     AUCAR   DC      /0001       ITCNT           80616150
0DF5 0 8105             DC      /8105       SP  CR          80616160
0DF6 0 1E3C             DC      /1E3C       C   A           80616170
0DF7 0 6060             DC      /6060       R   R           80616180
0DF8 0 2034             DC      /2034       I   E           80616190
0DF9 0 6021             DC      /6021       R               80616200
0DFA 0 6034             DC      /6034       R   E           80616210
0DFB 0 9CB0             DC      /9CB0       T   U           80616220
0DFC 0 6074             DC      /6074       R   N           80616230
0DFD 0 21FF             DC      /21FF                       80616240
0DFE 0 0078             DC      120         ITCNT           80616250
0DFF 0 21FF             DC      /21FF       SPACE           80616260
0E00 0 0001             DC      1           ITCNT           80616270
0E01 0 0921             DC      /0921       RED             80616280
0E02 0 1E3C             DC      /1E3C       C   A           80616290
0E03 0 6060             DC      /6060       R   R           80616300
0E04 0 2034             DC      /2034       I   E           80616310
0E05 0 6021             DC      /6021       R               80616320
0E06 0 6034             DC      /6034       R   E           80616330
```

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0E07 0 9CB0          DC    /9CB0     T   U          80616340
0E08 0 6074          DC    /6074     R   N          80616350
0E09 0 21FF          DC    /21FF                    80616360
0E0A 0 0078          DC    120       ITCNT          80616370
0E0B 0 21FF          DC    /21FF     SPACE          80616380
0E0C 0 FFFF          DC    /FFFF                    80616390
                     *                              80616400
                     *                              80616410
0E0D 0 0001    ROCK  DC    1         ITCNT          80616420
0E0E 0 2181          DC    /2181     SP CR          80616430
0E0F 0 05FF          DC    /05FF     BLACK          80616440
0E10 0 0002          DC    2         ITCNT          80616450
0E11 0 81C0          DC    /81C0     CR  NOS        80616460
0E12 0 8040          DC    /8040     ,   $          80616470
0E13 0 0020          DC    /0020     .   I          80616480
0E14 0 60A0          DC    /60A0     R   Z          80616490
0E15 0 E0D0          DC    /E0D0     9   6          80616500
0E16 0 9050          DC    /9050     W   O          80616510
0E17 0 1030          DC    /1030     F   D          80616520
0E18 0 70B0          DC    /70B0     M   U          80616530
0E19 0 F0D8          DC    /F0D8     4   2          80616540
0E1A 0 9858          DC    /9858     S   K          80616550
0E1B 0 1804          DC    /1804     B   AT         80616560
0E1C 0 4484          DC    /4484     AND -          80616570
0E1D 0 C4E4          DC    /C4E4     0   8          80616580
0E1E 0 A464          DC    /A464     Y   Q          80616590
0E1F 0 2414          DC    /2414     H   G          80616600
0E20 0 5494          DC    /5494     P   X          80616610
0E21 0 D4F4          DC    /D4F4     7   5          80616620
0E22 0 B474          DC    /B474     V   N          80616630
0E23 0 341C          DC    /341C     E   C          80616640
0E24 0 5C9C          DC    /5C9C     L   T          80616650
0E25 0 DCFC          DC    /DCFC     3   1          80616660
0E26 0 BC7C          DC    /BC7C     /   J          80616670
0E27 0 3C21          DC    /3C21     A              80616680
0E28 0 0242          DC    /0242     CNT ECX        80616690
0E29 0 82C2          DC    /82C2     CLN #          80616700
0E2A 0 E2A2          DC    /E2A2     QTE Z          80616710
0E2B 0 6222          DC    /6222     R   LOR        80616720
0E2C 0 1252          DC    /1252     F   Q          80616730
0E2D 0 92D2          DC    /92D2     W   SMI        80616740
0E2E 0 F2B2          DC    /F2B2     I   U          80616750
0E2F 0 7232          DC    /7232     M   D          80616760
0E30 0 1A5A          DC    /1A5A     B   K          80616770
0E31 0 9ADA          DC    /9ADA     S   T          80616780
0E32 0 C686          DC    /C686     LNT QSN        80616790
0E33 0 4606          DC    /4606     GTR PCT        80616800
0E34 0 2666          DC    /2666     H   Q          80616810
0E35 0 A6E6          DC    /A6E6     Y   @          80616820
0E36 0 D696          DC    /D696     *   X          80616830
0E37 0 5616          DC    /5616     P   G          80616840
0E38 0 3676          DC    /3676     E   N          80616850
0E39 0 B6F6          DC    /B6F6     V   ¤          80616860
0E3A 0 DE9E          DC    /DE9E     LFS T          80616870
0E3B 0 5E1E          DC    /5E1E     L   C          80616880
0E3C 0 3E7E          DC    /3E7E     A   J          80616890
0E3D 0 BEFE          DC    /BEFE     UDR %          80616900
0E3E 0 09FF          DC    /09FF     RED            80616910
0E3F 0 FFFF          DC    /FFFF                    80616920
                     *                              80616930
                     *                              80616940
0E40 0 0001    ROLL  DC    1         ITCNT          80616950
0E41 0 2181          DC    /2181     SP CR          80616960
0E42 0 05FF          DC    /05FF     BLACK          80616970
0E43 0 0002          DC    2         ITCNT          80616980
0E44 0 81C0          DC    /81C0     CR  NOS        80616990
0E45 0 E0D0          DC    /E0D0     9   6          80617000
0E46 0 F0D8          DC    /F0D8     4   2          80617010
```



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0E47 0 C4E4          DC    /C4E4     0   8          80617020
0E48 0 D4F4          DC    /D4F4     7   5          80617030
0E49 0 DCFC          DC    /DCFC     3   1          80617040
0E4A 0 BC9C          DC    /BC9C     /   T          80617050
0E4B 0 B494          DC    /B494     V   X          80617060
0E4C 0 A484          DC    /A484     Y   -          80617070
0E4D 0 98B0          DC    /98B0     S   U          80617080
0E4E 0 90A0          DC    /90A0     W   Z          80617090
0E4F 0 8040          DC    /8040     ,   $          80617100
0E50 0 6050          DC    /6050     R   O          80617110
0E51 0 7058          DC    /7058     M   K          80617120
0E52 0 4464          DC    /4464     AND Q          80617130
0E53 0 5474          DC    /5474     P   N          80617140
0E54 0 5C7C          DC    /5C7C     L   J          80617150
0E55 0 3C1C          DC    /3C1C     A   C          80617160
0E56 0 3414          DC    /3414     E   G          80617170
0E57 0 2404          DC    /2404     H   AT         80617180
0E58 0 1830          DC    /1830     B   D          80617190
0E59 0 1020          DC    /1020     F   I          80617200
0E5A 0 0021          DC    /0021     .              80617210
0E5B 0 3E1E          DC    /3E1E     A   C          80617220
0E5C 0 3616          DC    /3616     E   G          80617230
0E5D 0 2606          DC    /2606     H   PCT        80617240
0E5E 0 1A32          DC    /1A32     B   D          80617250
0E5F 0 1222          DC    /1222     F   I          80617260
0E60 0 0242          DC    /0242     CNT EXC        80617270
0E61 0 6252          DC    /6252     R   O          80617280
0E62 0 725A          DC    /725A     M   K          80617290
0E63 0 4666          DC    /4666     GTR Q          80617300
0E64 0 5676          DC    /5676     P   N          80617310
0E65 0 5E7E          DC    /5E7E     L   J          80617320
0E66 0 BE9E          DC    /BE9E     UDR T          80617330
0E67 0 B696          DC    /B696     V   X          80617340
0E68 0 A686          DC    /A686     Y   QSN        80617350
0E69 0 9AB2          DC    /9AB2     S   U          80617360
0E6A 0 92A2          DC    /92A2     W   Z          80617370
0E6B 0 82C2          DC    /82C2     CLN #          80617380
0E6C 0 E2D2          DC    /E2D2     QTE SMI        80617390
0E6D 0 F2DA          DC    /F2DA     LNT &          80617400
0E6E 0 C6E6          DC    /C6E6     LOR @          80617410
0E6F 0 D6F6          DC    /D6F6     *   ¤          80617420
0E70 0 DEFE          DC    /DEFE     LES %          80617430
0E71 0 09FF          DC    /09FF     RED            80617440
0E72 0 FFFF          DC    /FFFF                    80617450
                     *                              80617460
                     *                              80617470
0E73 0 0001    TWIST DC    1         ITCNT          80617480
0E74 0 2181          DC    /2181     SP CR          80617490
0E75 0 05FF          DC    /05FF     BLACK          80617500
0E76 0 0002          DC    2         ITCNT          80617510
0E77 0 81C0          DC    /81C0     CR  NOS        80617520
0E78 0 3E80          DC    /3E80     A   ,          80617530
0E79 0 7E40          DC    /7E40     J   $          80617540
0E7A 0 BE00          DC    /BE00     UDR .          80617550
0E7B 0 FE20          DC    /FE20     %   I          80617560
0E7C 0 DE60          DC    /DE60     LES R          80617570
0E7D 0 9EA0          DC    /9EA0     T   Z          80617580
0E7E 0 5EE0          DC    /5EE0     L   9          80617590
0E7F 0 1ED0          DC    /1ED0     C   6          80617600
0E80 0 3690          DC    /3690     E   W          80617610
0E81 0 7650          DC    /7650     N   O          80617620
0E82 0 B610          DC    /B610     V   F          80617630
0E83 0 F630          DC    /F630     ¤   D          80617640
0E84 0 D670          DC    /D670     *   M          80617650
0E85 0 96B0          DC    /96B0     X   U          80617660
0E86 0 56F0          DC    /56F0     P   4          80617670
0E87 0 16D8          DC    /16D8     G   2          80617680
0E88 0 2698          DC    /2698     H   S          80617690
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0E89 0 6658              DC      /6658       Q   K          80617700
0E8A 0 A618              DC      /A618       Y   B          80617710
0E8B 0 E604              DC      /E604       @   AT         80617720
0E8C 0 C644              DC      /C644       LOR AND        80617730
0E8D 0 8684              DC      /8684       QSN -          80617740
0E8E 0 46C4              DC      /46C4       GTR 0          80617750
0E8F 0 06E4              DC      /06E4       PCT 8          80617760
0E90 0 1AA4              DC      /1AA4       B   Y          80617770
0E91 0 5A64              DC      /5A64       K   Q          80617780
0E92 0 9A24              DC      /9A24       S   H          80617790
0E93 0 DA14              DC      /DA14       &   G          80617800
0E94 0 F254              DC      /F254       LNT P          80617810
0E95 0 B294              DC      /B294       U   X          80617820
0E96 0 72D4              DC      /72D4       M   7          80617830
0E97 0 32F4              DC      /32F4       D   5          80617840
0E98 0 12B4              DC      /12B4       F   V          80617850
0E99 0 5274              DC      /5274       O   N          80617860
0E9A 0 9234              DC      /9234       W   E          80617870
0E9B 0 D21C              DC      /D21C       SMI C          80617880
0E9C 0 E25C              DC      /E25C       QTE L          80617890
0E9D 0 A29C              DC      /A29C       Z   T          80617900
0E9E 0 62DC              DC      /62DC       R   3          80617910
0E9F 0 22FC              DC      /22FC       I   1          80617920
0EA0 0 02BC              DC      /02BC       CNT /          80617930
0EA1 0 427C              DC      /427C       EXC J          80617940
0EA2 0 823C              DC      /823C       CLN A          80617950
0EA3 0 C221              DC      /C221       #              80617960
0EA4 0 09FF              DC      /09FF       RED            80617970
0EA5 0 0001    CLEND     DC      1           ITCNT          80617980
0EA6 0 05FF              DC      /05FF       BLACK          80617990
0EA7 0 FFFF              DC      /FFFF                      80618000
                         ********************************************** 80618010
                         ********************************************** 80618020
                         *                                            80618030
                         *                PRINTER OUTPUT STATUS       80618040
                         *                     TABLES                 80618050
                         *                PRINTER NO 0                80618060
0EA8    0000             BSS     E   0                          80618070
0EA8 1 0D73    PTR0      DC      TACAR       WORD POINTER       80618080
0EA9 0 0002              DC      2           TEST POINTER       80618090
0EAA 0 8000              DC      /8000       PTR NOT SELECTED   80618100
                         *       /C000       PTR IN KEYBOARD TEST 80618110
                         *       /0000       PTR SVC REQUESTED  80618120
0EAB 0 81FF              DC      /81FF       NEXT PTR OUTPUT WORD 80618130
0EAC 0 0001              DC      1           ITERATION COUNT    80618140
0EAD 0 0001              DC      1           SHIFT WORD         80618150
0EAE 0 0000              DC      0           WORDS PRINTED      80618160
0EAF 0 0000              DC      0           LAST ITCNT ADDR PT 80618170
0EB0 1 0EAB              DC      PTR0&OUT                       80618180
0EB1 0 0100              DC      /0100       WRITE COMMAND      80618190
0EB2 0 0000    PTRON     DC      0           PRINTER            80618200
0EB3 0 0701              DC      /0701       SENSE DSW COMMAND  80618210
0EB4 0 0000              DC      0                              80618220
0EB5 0 0400              DC      /0400       SELECT KEYBOARD CMD 80618230
0EB6 1 0EB4              DC      PTR0&KEY                       80618240
0EB7 0 0200              DC      /0200       READ KEYBOARD COMND 80618250
0EB8 0 0000              DC      /0000       ERROR DSW WAS      80618260
0EB9 0 0000              DC      /0000       DSW SHOULD HAVE BEEN 80618270
                         *                                      80618280
                         *                                      80618290
                         *            PRINTER NO 1              80618300
                         *                                      80618310
0EBA 1 0D73    PTR1      DC      TACAR       WORD POINTER       80618320
0EBB 0 0002              DC      2           TEST POINTER       80618330
0EBC 0 8000              DC      /8000       PTR NOT SELECTED   80618340
                         *       /C000       PTR IN KEYBOARD TEST 80618350
                         *       /0000       PTR SVC REQUESTED  80618360
0EBD 0 81FF              DC      /81FF       NEXT PTR OUTPUT WORD 80618370
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0EBE 0 0001              DC      1           ITERATION COUNT    80618380
0EBF 0 0001              DC      1           SHIFT WORD         80618390
0EC0 0 0000              DC      0           WORDS PRINTED      80618400
0EC1 0 0000              DC      0           LAST ITCNT ADDR PT 80618410
0EC2 1 0EBD              DC      PTR1&OUT                       80618420
0EC3 0 0100              DC      /0100       WRITE COMMAND      80618430
0EC4 0 0001              DC      1                              80618440
0EC5 0 0701              DC      /0701       SENSE DSW COMMAND  80618450
0EC6 0 0000              DC      0                              80618460
0EC7 0 0400              DC      /0400       SELECT KEYBOARD CMD 80618470
0EC8 1 0EC6              DC      PTR1&KEY                       80618480
0EC9 0 0200              DC      /0200       READ KEYBOARD COMND 80618490
0ECA 0 0000              DC      /0000       ERROR DSW WAS      80618500
0ECB 0 0000              DC      /0000       DSW SHOULD HAVE BEEN 80618510
                         *                                      80618520
                         *                                      80618530
                         *            PRINTER NO 2              80618540
                         *                                      80618550
0ECC 1 0D73    PTR2      DC      TACAR       WORD POINTER       80618560
0ECD 0 0002              DC      2           TEST POINTER       80618570
0ECE 0 8000              DC      /8000       PTR NOT SELECTED   80618580
                         *       /C000       PTR IN KEYBOARD TEST 80618590
                         *       /0000       PTR SVC REQUESTED  80618600
0ECF 0 81FF              DC      /81FF       NEXT PTR OUTPUT WORD 80618610
0ED0 0 0001              DC      1           ITERATION COUNT    80618620
0ED1 0 0001              DC      1           SHIFT WORD         80618630
0ED2 0 0000              DC      0           WORDS PRINTED      80618640
0ED3 0 0000              DC      0           LAST ITCNT ADDR PT 80618650
0ED4 1 0ECF              DC      PTR2&OUT                       80618660
0ED5 0 0100              DC      /0100       WRITE COMMAND      80618670
0ED6 0 0002              DC      2                              80618680
0ED7 0 0701              DC      /0701       SENSE DSW COMMAND  80618690
0ED8 0 0000              DC      0                              80618700
0ED9 0 0400              DC      /0400       SELECT KEYBOARD CMD 80618710
0EDA 1 0ED8              DC      PTR2&KEY                       80618720
0EDB 0 0200              DC      /0200       READ KEYBOARD COMND 80618730
0EDC 0 0000              DC      /0000       ERROR DSW WAS      80618740
0EDD 0 0000              DC      /0000       DSW SHOULD HAVE BEEN 80618750
                         *                                      80618760
                         *                                      80618770
                         *            PRINTER NO 3              80618780
                         *                                      80618790
0EDE 1 0D73    PTR3      DC      TACAR       WORD POINTER       80618800
0EDF 0 0002              DC      2           TEST POINTER       80618810
0EE0 0 8000              DC      /8000       PTR NOT SELECTED   80618820
                         *       /C000       PTR IN KEYBOARD TEST 80618830
                         *       /0000       PTR SVC REQUESTED  80618840
0EE1 0 81FF              DC      /81FF       NEXT PTR OUTPUT WORD 80618850
0EE2 0 0001              DC      1           ITERATION COUNT    80618860
0EE3 0 0001              DC      1           SHIFT WORD         80618870
0EE4 0 0000              DC      0           WORDS PRINTED      80618880
0EE5 0 0000              DC      0           LAST ITCNT ADDR PT 80618890
0EE6 1 0EE1              DC      PTR3&OUT                       80618900
0EE7 0 0100              DC      /0100       WRITE COMMAND      80618910
0EE8 0 0003              DC      3                              80618920
0EE9 0 0701              DC      /0701       SENSE DSW COMMAND  80618930
0EEA 0 0000              DC      0                              80618940
0EEB 0 0400              DC      /0400       SELECT KEYBOARD CMD 80618950
0EEC 1 0EEA              DC      PTR3&KEY                       80618960
0EED 0 0200              DC      /0200       READ KEYBOARD COMND 80618970
0EEE 0 0000              DC      /0000       ERROR DSW WAS      80618980
0EEF 0 0000              DC      /0000       DSW SHOULD HAVE BEEN 80618990
                         *                                      80619000
                         *                                      80619010
                         *            PRINTER NO 4              80619020
                         *                                      80619030
0EF0 1 0D73    PTR4      DC      TACAR       WORD POINTER       80619040
0EF1 0 0002              DC      2           TEST POINTER       80619050
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0EF2 0 8000          DC    /8000     PTR NOT SELECTED          80619060
                     *     /C000     PTR IN KEYBOARD TEST      80619070
                     *     /0000     PTR SVC REQUESTED         80619080
0EF3 0 81FF          DC    /81FF     NEXT PTR OUTPUT WORD      80619090
0EF4 0 0001          DC    1         ITERATION COUNT           80619100
0EF5 0 0001          DC    1         SHIFT WORD                80619110
0EF6 0 0000          DC    0         WORDS PRINTED             80619120
0EF7 0 0000          DC    0         LAST ITCNT ADDR PT        80619130
0EF8 1 0EF3          DC    PTR4&3                              80619140
0EF9 0 0100          DC    /0100     WRITE COMMAND             80619150
0EFA 0 0004          DC    4                                   80619160
0EFB 0 0701          DC    /0701     SENSE DSW COMMAND         80619170
0EFC 0 0000          DC    0                                   80619180
0EFD 0 0400          DC    /0400     SELECT KEYBOARD CMD       80619190
0EFE 1 0EFC          DC    PTR4&KEY                            80619200
0EFF 0 0200          DC    /0200     READ KEYBOARD COMND       80619210
0F00 0 0000          DC    /0000     ERROR DSW WAS             80619220
0F01 0 0000          DC    /0000     DSW SHOULD HAVE BEEN      80619230
                     *                                         80619240
                     *                                         80619250
                     *          PRINTER NO 5                   80619260
                     *                                         80619270
0F02 1 0D73    PTR5  DC    TACAR     WORD POINTER              80619280
0F03 0 0002          DC    2         TEST POINTER              80619290
0F04 0 8000          DC    /8000     PTR NOT SELECTED          80619300
                     *     /C000     PTR IN KEYBOARD TEST      80619310
                     *     /0000     PTR SVC REQUESTED         80619320
0F05 0 81FF          DC    /81FF     NEXT PTR OUTPUT WORD      80619330
0F06 0 0001          DC    1         ITERATION COUNT           80619340
0F07 0 0001          DC    1         SHIFT WORD                80619350
0F08 0 0000          DC    0         WORDS PRINTED             80619360
0F09 0 0000          DC    0         LAST ITCNT ADDR PT        80619370
0F0A 1 0F05          DC    PTR5&OUT                            80619380
0F0B 0 0100          DC    /0100     WRITE COMMAND             80619390
0F0C 0 0005          DC    5                                   80619400
0F0D 0 0701          DC    /0701     SENSE DSW COMMAND         80619410
0F0E 0 0000          DC    0                                   80619420
0F0F 0 0400          DC    /0400     SELECT KEYBOARD CMD       80619430
0F10 1 0F0E          DC    PTR5&KEY                            80619440
0F11 0 0200          DC    /0200     READ KEYBOARD COMND       80619450
0F12 0 0000          DC    /0000     ERROR DSW WAS             80619460
0F13 0 0000          DC    /0000     DSW SHOULD HAVE BEEN      80619470
                     *                                         80619480
                     *                                         80619490
                     *          PRINTER NO 6                   80619500
                     *                                         80619510
0F14 1 0D73    PTR6  DC    TACAR     WORD POINTER              80619520
0F15 0 0002          DC    2         TEST POINTER              80619530
0F16 0 8000          DC    /8000     PTR NOT SELECTED          80619540
                     *     /C000     PTR IN KEYBOARD TEST      80619550
                     *     /0000     PTR SVC REQUESTED         80619560
0F17 0 81FF          DC    /81FF     NEXT PTR OUTPUT WORD      80619570
0F18 0 0001          DC    1         ITERATION COUNT           80619580
0F19 0 0001          DC    1         SHIFT WORD                80619590
0F1A 0 0000          DC    0         WORDS PRINTED             80619600
0F1B 0 0000          DC    0         LAST ITCNT ADDR PT        80619610
0F1C 1 0F17          DC    PTR6&OUT                            80619620
0F1D 0 0100          DC    /0100     WRITE COMMAND             80619630
0F1E 0 0006          DC    6                                   80619640
0F1F 0 0701          DC    /0701     SENSE DSW COMMAND         80619650
0F20 0 0000          DC    0                                   80619660
0F21 0 0400          DC    /0400     SELECT KEYBOARD CMD       80619670
0F22 1 0F20          DC    PTR6&KEY                            80619680
0F23 0 0200          DC    /0200     READ KEYBOARD COMND       80619690
0F24 0 0000          DC    /0000     ERROR DSW WAS             80619700
0F25 0 0000          DC    /0000     DSW SHOULD HAVE BEEN      80619710
                     *                                         80619720
                     *                                         80619730
```



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                     *                                         80619740
                     *          PRINTER NO 7                   80619750
                     *                                         80619760
0F26 1 0D73    PTR7  DC    TACAR     WORD POINTER              80619770
0F27 0 0002          DC    2         TEST POINTER              80619780
0F28 0 8000          DC    /8000     PTR NOT SELECTED          80619790
                     *     /C000     PTR IN KEYBOARD TEST      80619800
                     *     /0000     PTR SVC REQUESTED         80619810
0F29 0 81FF          DC    /81FF     NEXT PTR OUTPUT WORD      80619820
0F2A 0 0001          DC    1         ITERATION COUNT           80619830
0F2B 0 0001          DC    1         SHIFT WORD                80619840
0F2C 0 0000          DC    0         WORDS PRINTED             80619850
0F2D 0 0000          DC    0         LAST ITCNT ADDR PT        80619860
0F2E 1 0F29          DC    PTR7&OUT                            80619870
0F2F 0 0100          DC    /0100     WRITE COMMAND             80619880
0F30 0 0007          DC    7                                   80619890
0F31 0 0701          DC    /0701     SENSE DSW COMMAND         80619900
0F32 0 0000          DC    0                                   80619910
0F33 0 0400          DC    /0400     SELECT KEYBOARD CMD       80619920
0F34 1 0F32          DC    PTR7&KEY                            80619930
0F35 0 0200          DC    /0200     READ KEYBOARD COMND       80619940
0F36 0 0000          DC    /0000     ERROR DSW WAS             80619950
0F37 0 0000          DC    /0000     DSW SHOULD HAVE BEEN      80619960
                     *                                         80619970
                     *                                         80619980
0F38 1 0D73    PTR8  DC    TACAR     WORD POINTER              80619990
0F39 0 0002          DC    2         TEST POINTER              80620000
0F3A 0 8000          DC    /8000     PTR NOT SELECTED          80620010
                     *     /C000     PTR IN KEYBOARD TEST      80620020
                     *     /0000     PTR SVC REQUESTED         80620030
0F3B 0 81FF          DC    /81FF     NEXT PTR OUTPUT WORD      80620040
0F3C 0 0001          DC    1         ITERATION COUNT           80620050
0F3D 0 0001          DC    1         SHIFT WORD                80620060
0F3E 0 0000          DC    0         WORDS PRINTED             80620070
0F3F 0 0000          DC    0         LAST ITCNT ADDR PT        80620080
0F40 1 0F3B          DC    PTR8&OUT                            80620090
0F41 0 0100          DC    /0100     WRITE COMMAND             80620100
0F42 0 0007          DC    7                                   80620110
0F43 0 0701          DC    /0701     SENSE DSW COMMAND         80620120
0F44 0 0000          DC    0                                   80620130
0F45 0 0400          DC    /0400     SELECT KEYBOARD CMD       80620140
0F46 1 0F44          DC    PTR8&KEY                            80620150
0F47 0 0200          DC    /0200     READ KEYBOARD CMD         80620160
0F48 0 0000          DC    /0000     ERROR DSW WAS             80620170
0F49 0 0000          DC    /0000     DSW SHOULD HAVE BEEN      80620180
                     *                                         80620190
                     *                                         80620200
0F4A 0 0000          DC    0                                   80620210
0FFD                 ORG   /7FE&PID                            80620220
0FFD 0 0000    PEND  DC    0                                   80620230
0FFE   08FA          END   TYCUS                               80620240
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

```
ADR     0000  0AB7 0CCE
ADRS    0A5C  0A5A
AGAIN   091F  0807 0918 094C
AGAN1   0926  0924
AGAN2   092C  0931
AGAN4   093A  092E
AGAN5   0932  0929 0937
AGAN6   0938  0934
AGAN8   093E  0925
ALL     0B07  0AE7
ANY     0C96  08DA 0BE0 0BE2 0C00 0C04 0C0B 0C10 0C19 0C1B 0C1F 0C22 0C26 0C8B
              0CC2 0CD2
AUCAR   0DF4  0C91
AWAIT   0CB5  0CB5
BASIC   0B06  08C4 08E0 09EA 0A70 0AE4 0C40
BEGIN   012C  08FB
BSPSE   0BC9  0C0D
BSYER   0B3A  0BF3
BSYOK   0B40  0B39
BUILD   099A  09AB
CKDSX   0C7C  0C61
CKERR   09F4  09E6 09F1
CKHAV   09F3  09ED
CKREL   0A16  09F3 0A19 0A2B 0A4E
CKRXT   0A27  0A1F 0A20 0A21
CLEND   0EA5
CMPRE   0BCD  0BA8
CNVRT   0BA5  0BAB
COLOR   0DBF  0C8F
COMIL   087D  08BE 08EB
COMIN   0870  0825 082E 0837 0840 0849 0852 085B 0864 086D 0877
COMIX   0877  0885 0887 088B 08BC 08CB 08E3 08E7 08F3
COMI1   08B4  087A
COMI2   08B7  08B3
COMI4   08E8  08BB
CXREL   0C56  0C51
DDEFS   094E  0976
DDEFX   081B  0904 0CE9
DDEF0   0811  0902 092C 0938 093A 094E 0967 0A17 0A1D 0A55 0C56 0C5C 0C68 0C72
              0CEB
DDEF1   0812  094F
DDEF2   0813  0950
DDEF3   0814  0951
DDEF4   0815  0952
DDEF5   0816  0953
DDEF6   0817  0954
DDEF7   0818  0955
DDEF8   0819  0956
DETBL   08A8  0895
DETC1   08A2  0897
DETE    088C  0886 089B 08A0 0AF7 0B37
DETG    0894  089A
DETR    089B  0891 08A6
DETS    08AB  088E 089F
DETX    089D  088D 0894 08A7
DSWAS   0B44  0B54 0B62
DSWBS   0B46  0B69 0B6D
DSWBY   0B42  0B35 0B3A 0BEF
DSWCS   0B48  0927 0B89 0B8A 0B8D
DVAS    0957  097C 099A 09A0 09A5 09DC
DVA0    081D  0957 0A56 0C73
DVA1    0828  0958
DVA2    0831  0959
DVA3    083A  095A
DVA4    0843  095B
DVA5    084C  095C
DVA6    0855  095D
DVA7    085E  095E
```



```
DVA8    0867  095F
ELVEN   0A30  0A72 0C42
EMESG   0C82  0BBA 0BBE 0C31 0C32 0C33 0C35 0C3A 0C60
END     012E  0CBA
ENDM    0C10  0BB2
ENDM1   0C1D  0C17
ENDM2   0C25  0C14
ENDM3   0C27  0C24
EPA     0808
ERBUY   0C76  0C71
ERDLY   0C48  0C45
ERDOO   0C66  0C63 0C76
ERDSW   0C5E  0C58 0C7C
ERGET   0C6F
ERIND   09E2  0889 09F4 0B0A
ERLOP   0C63  0C62
ERR     0010  0888 0B0F 0B17 0B1E
ERROR   0130  0C5E
ERSE    0BF7  0BB6
ERSEA   0BC8  0BF7 0BF8
ERSE1   0C07  0BFD
ERSE2   0C0D  0C06
ERSLC   0BC5  0BB4
EXEC    0A00  0A3D 0A4A 0A5B 0B01
EXECA   0A5B  0A48
EXEC0   0A39  0A0B 0A10 0A36
EXEC1   0A02  0A40 0A46 0A4D
EXEC2   0A04  0A3B
EXEC3   0A42  0A06
EXEC5   0A14  0A11
EXEC6   0A44  0A13 0A15 0A38
EXEC7   0A67  0A54 0B72
EXEC8   0A58
EXEC9   0A6A  0A41
EXIT    0BE6  0BDC
FSTSW   08F7  08FA 08FF 090B
FUND    0C95  0AB0 0B07 0C21 0C25
FUNR    0C8B  0AA9 0AAE 0AB4 0B07 0CCC
F0C00   0B43
F0200   0B47  0A8E 0B6A 0C48
GO      08FE  0806 091D 09BF
GO1     090C  0900
HALT    0133
I       0A6C  0A78 0A7A 0A85 0A87 0ABA 0AC1 0AC8 0AD4 0AD9
II      08F6  087C 0A0E 0CC9
INERR   0B09  09F5
INER0   0B0C  0B1F
INER1   0B0F  0B14
INER2   0B17  0B11
INTSW   081C  0820 0A4F 0C6C
ITR     0004  0AAB 0AD3 0AD5 0ADE 0CD3
KA000   08F5  08BD 08CD
KBDOL   08AE  08C1
KBDRQ   08BF  08B5
KBDRR   08CD  08C8
KC000   0961  08EC
KECOD   0CF3  0BA5 0CB3
KEY     000C  0911 09A4 0B67 0B7E 0B83 0B86 0B95 0B98 0BA7 0BAC 0BB1 0BB5 0BB8
              0EB6 0EC8 0EDA 0EEC 0EFE 0F10 0F22 0F34 0F46
KEYBD   0B74  0A64
KEYCR   0BCC  0B7F 0B94 0B97 0B9C
KEYER   0886  0884 08F2
KEYIN   0B93  0B8B
KEYPT   0B7E  0B77
KE000   0C89  08B9 0BE6 0C34 0C4D
KFC00   0A2E  0A42
KFFE7   0BC7  0BF9
KFFFF   0B04  0ADF 0AEA
```

```
KFF00   0B03  0AD0
KFF80   09B6  0942 0972
KF000   0BCB  08E8 0B60
KF800   0A2D  0A08
K0C00   0B05  0AFF 0B36 0BF1
K0008   0BCA  0BB0 0C27
K0100   09B3  099C
K0200   09B5  09A7
K0400   08AC  0890 09A2
K0701   09B4  099E
K4000   08F4  08EE 08F0
K8000   0960  0872 087E 0881 090F 093C 09C9 0A9D 0B4A
LCASE   0DA2  0C8E
LOG     012F
LOWER   0BC3  0BC1 0BCF 0BD5
MARK    0A6E  0B40
MARKA   0A88  0A8C
MARKB   0A8B  0A80
MARKG   0ABC  0A5F 0A74 0ACB 0B5E
MARKK   0AE2  0C2E
MARKL   0ABE  0A5D 0AA7
MARKN   0ACF  0AC6
MARKP   0A9D  0A9A
MARKQ   0A9B  0A99
MARKR   0A92  0A8D 0A94
MARKS   0AC7  0AC3
MARKX   0AEF  0A6A 0A8A 0AD1 0BF5
MARK2   0A8D  0AB2
MARK3   0AA5  0AE5 0AE8 0AEE
MARK4   0AA9
MARK5   0AAE  0AD6 0AE0
MLSCF   0809  091B 094A 09AF 0A23 0AF1 0B29 0B5A 0C7E
NCAP    0BC4  0BAD
NEXT    0A62  0A60
NOCP    0BC1  0BAE
NOIN    0B4A  0A65
NOS     0006  0AB9 0AC7 0AC9 0AD8 0ADA 0CD6
NOSFT   0BD9
ONLIN   080F  08BF 0922 0B80
OUT     0003  0A7C 0A89 0ACF 0BD3 0C0E 0CD1 0EB0 0EC2 0ED4 0EE6 0F0A 0F1C 0F2E
              0F40
OUTWD   0A6D  0A7B 0A7E 0A8B
PAD     0007  0AAD 0AB6 0ADB 0ADC 0CD7
PDSWX   0C7E  0A9B 0C4F 0C65 0C6A 0C75 0C78 0C7B 0CB9
PEND    0FFD  0808
PID     07FF  08FD
PRCON   09E3  0801 09DB 0AEF 0B15 0B51 0B56 0B6B
PRDSW   0C30  0AFB 0B19 0B3C 0B4F 0B70 0B7A 0B8F 0B9E 0BBC 0C66
PRSEL   09B9  0916 09CC 09FD 0AA0
PTR     000A  0874 0876 08CA 099F 0AF6 0B34 0B4D 0B53 0B68 0B76 0B88 0BEA 0BEE
              0C37
PTRAD   0C88  0AFD 0B1B 0B3E 0B7C 0B91 0BA0 0C36
PTR0    0EA8  0823 08A8 09E3 0A34 0A58 0A68 0C4B 0EB0 0EB6
PTR0I   081E  0826
PTRON   0EB2
PTR1    0EBA  082C 08A9 0EC2 0EC8
PTR1I   0829  082F
PTR2    0ECC  0835 0ED4 0EDA
PTR2I   0832  0838
PTR3    0EDE  083E 0EE6 0EEC
PTR3I   083B  0841
PTR4    0EF0  0847 0EF8 0EFE
PTR4I   0844  084A
PTR5    0F02  0850 08AD 0F0A 0F10
PTR5I   084D  0853
PTR6    0F14  0859 0F1C 0F22
PTR6I   0856  085C
PTR7    0F26  0862 0F2E 0F34
```



```
PTR7I   085F  0865
PTR8    0F38  086B 090C 0997 09C2 0A02 0A3E 0A4B 0B0C 0CC6 0F40 0F46
PTR8I   0868  086E
P16FF   081A  0821 082A 0833 083C 0845 084E 0857 0860 0869 08A2 0970 0973 09FF
READY   0AF5  0A62
RED1    0D83  0C1D
RELCK   0C4B  0C79
RELDV   0132  0A1B 0C5A 0CDB
REQDV   0131  0981 0A52 0C6F
RESET   0910  0915
RESTO   0A66  0A05 0A67
RID     0800  0C3C 0C46
ROCK    0E0D  0C92
ROLL    0E40  0C93
RQST    0962  0919
RQSTC   0981  0975 09AD
RQSTT   0996  096D
RQST1   0967  096C
RQST2   0976  0969
RQST3   096B  0980
RQST5   09AD  0983
RQST6   0997  0984 0985 0986 0987 0988 0989 098A 098B 098C 098D 098E 098F 0990
              0991 0992 0993 0994 0995
RQST8   0984  0964
RQST9   09AF
RSADR   0AA3  08DC 0C2A 0CC4
RTN     0001  08D2 0AA6 0C3B 0CCB
RYDER   0AFA  0BEB
SEE     000E  08CF 09A8 0B74 0B85 0B93
SELC    0B67  0B63
SELC1   0B70  0B66 0B6F
SELC2   0B53  0A63 0BC0 0BC2 0BEA
SELC3   0B5E  0B58
SELT    09BA  0948 09AC 09FB
SELT7   09C7  09CE
SFT     0BDD  0BD8
SLT     0005  0ABB 0AC0 0AC2 0CD4
SLTWD   0BC6  08D7 0BD6 0BE4 0BFC 0C16
SPNDX   0DD5  0C90
START   012D  09B1 0A25 0AF3 0B2C 0B5C 0C80
STS     0002  0471 087D 08B8 08CE 08ED 0910 09C8 09CF 09E3 0A04 0A34 0A44 0A68
              0A96 0A9F 0B00 0B61 0BE8 0C28 0C4B
SVC     0A34  0A31 0A32
SVCAD   0A31  0A09
SWCMP   09B7  0946 09F9
SWSTG   08F8  0908 0CED
SW0     0802  0B20
SW1     0803  0880 08C2 08DE 08E5 09E8 0A6E 0AE2 0C2C 0C3E 0CBE
SW2     0804  0906 0920 093E 0944 09BA 09C4 09F7 0CEF
SW3     0805  0A75 0A81
TACAR   0D73  0C8C 0CCF 0EA8 0EBA 0ECC 0EDE 0EF0 0F02 0F14 0F26 0F38
TBLI    0BE4  0C0E
TBLIS   0BE2  0BDB
TBLIZ   0BE0  0BDF
TDLY2   0B27  0B32
TDLY4   0B2E  0B27 0B2B
TDLY6   0B33  0B22
TEMP    09B8  09D2 09D3 09D5
TEMPX   08F9  08AE 08B2
TEND    0CBC  0808 0CF1
TEND1   0CC9  0CDA
TEND2   0CE9  0CDD 0CDE 0CDF 0CE0 0CE1 0CE2 0CE3 0CE4 0CE5 0CE6 0CE7
TEND3   0CDD  0962
TERM    080A  0996 0A1E 0A57 0C5D 0C74 0CE8
TIMEB   0B08  0B24
TIMEX   0C8A  0A90 0A97 0B25 0B30 0C4A 0C53 0CB4 0CB7
TIME1   0C79  0C55
TIPE    0879  0875
```

```
        TWIST   0E73   0C94
        TWLVE   0A2F   08C6 08D0 09EC
        TYCOD   0D33   0BCD
        TYCUS   08FA   0FFE
        TYEND   0CB3   09BD 09FE
        TYPIT   0B20   0AF9
        UCASE   0D85   0C8D
        WHCH    09D1   09C7 09E0
        WHCH1   09D8   09CA 09D0 09DE
        WHCH2   09D3   09DA
        WHCH4   09DC   09D7
        WRDCT   0BA2   08D4 0B9A 0BE5 0C12
        WRT     0008   099D 0B33 0BED
        XX      0944   093D 0940
        END OF ASSEMBLY
```

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TABLE OF CONTENTS

1. PURPOSE

MAGNETIC TAPE FUNCTION TEST (MTFNT) IS DESIGNED TO TEST EACH FUNCTION OF THE 2400 MAGNETIC TAPE SERIES FOR COMPLIANCE WITH THE PRODUCT SPECIFICATIONS.

THE MTFNT PROGRAM IS WRITTEN TO ACCOMMODATE SYSTEMS WITH-

1 - ONE OR TWO TAPE DRIVES.
2 - DRIVES WITH 9 TRACK OR 7 TRACK READ-WRITE HEADS. IN SYSTEMS WITH TWO TAPE DRIVES, THE DRIVES CAN BE EXERCISED IN AN ASYNCHRONOUS FASHION. BECAUSE MTFNT RUNS UNDER CONTROL OF DIAGNOSTIC MONITOR, INTERACTION BETWEEN MAGNETIC TAPE DRIVES AND OTHER DEVICES CAN ALSO BE TESTED.

2. PREREQUISITES

THIS PROGRAM MUST RUN UNDER CONTROL OF THE DIAGNOSTIC MONITOR.
THE DIAGNOSTIC MONITOR PROGRAM USES 2,047 STORAGE WORDS, AND THIS PROGRAM USES 2,047 STORAGE WORDS.

3. USE PROCEDURE

3.1 PROGRAM LOADING

STANDARD LOADING PROCEDURE AS DESCRIBED IN THE DIAGNOSTIC MONITOR USE PROCEDURE.

ON 2400 TAPE DRIVE,

1. LOAD REEL OF TAPE
2. DEPRESS LOAD-REWIND KEY
3. DEPRESS START KEY

TAPE SHOULD REWIND TO LOAD POINT, AND READY LAMP SHOULD GO ON.

3.2 PROGRAM OPERATION

STANDARD MONITOR OPERATING PROCEDURES APPLY.
THESE PROCEDURES ARE SUMMARIZED HERE. SEE CM USE PROCEDURE FOR DETAILS OF PARTS 1-4 BELOW.

1. CLEAR STORAGE
2. LOAD DIAGNOSTIC MONITOR
3. SELECT MODE OF EXECUTION
4. SELECT MONITOR CONTROL OPTIONS
5. SELECT PROGRAM OPTIONS FROM,

IF NO OPTIONS ARE SELECTED, THE PROGRAM WILL AUTOMATICALLY RUN ALL ROUTINES IN SEQUENCE. THIS RUN WILL BE ON BOTH DRIVES UNLESS THE EDIT CARD INDICATES THERE IS NO DRIVE 1 AVAILABLE.

NOTE

IN THIS MODE NO ROUTINE WILL CHECK THE ABILITY TO SENSE END OF TAPE MARKER, UNLESS THE E.O.T. MARKER IS LESS THAN 500 RECORDS FROM LOAD POINT.

TABLE 0 PROGRAM CONTROL FUNCTION
TABLE 1 ROUTINE SELECT FUNCTION (ONLY IF LOOP ROUTINE IS DESIRED)
TABLE 2 DEVICE SELECT FUNCTION

6. INSTRUCT MONITOR TO EXECUTE

3.3 SPECIAL CRC CHECK OPTION

A SPECIAL OPTION IS AVAILABLE TO SPEED CHECKING OF THE CRC CIRCUITRY. TO USE THIS OPTION.

A. ENTER BITS 7 (CHECK CRC), AND 10 (PRINT ONLY FIRST BAD DATA WORD) FROM TABLE 0.
B. SELECT ROUTINE 3 FOR THE DRIVE OR DRIVES TO BE RUN. (TABLE 1)
C. ON SYSTEMS WITH TWO DRIVES, IF IT IS ONLY DESIRED TO RUN ONE DRIVE, DESELECT THE DRIVE NOT TO BE RUN. (TABLE 2)
D. INSTRUCT MONITOR TO EXECUTE.
E. WAIT UNTIL THE FIRST PASS THRU TAPE IS COMPLETE. THIS IS THE WRITE PASS.
F. DURING READING, GROUND THE OUTPUT OF THE HI CLIP AMPLIFIER FOR ONE TRACK.
G. CHECK FOR THE FOLLOWING PRINTOUTS ON EACH RECORD READ WHILE THE HI CLIP AMPLIFIER OUTPUT IS GROUNDED.
   1. CORRECTABLE READ ERROR (A004)
   2. WRONG DATA (E007)
   3. RECEVERED READ ERROR (A003)
H. THE OCCURANCE OF THE 'RECOVERED READ ERROR' PRINTOUT SHOWS THE CRC CIRCUIT IS WORKING CORRECTLY.
I. REPEAT STEPS E THRU H FOR EACH TRACK.
J. TERMINATE THE PROGRAM BY INSTRUCTING THE MONITOR TO DEEXECUTE.

TABLE 0 CONTROL FUNCTION

SENSE/PROGRAM C 1 2 3 4 5 6 7 / C C C C C 1 1 1	1. SET FUNCTION CC IN SENSE/PROGRAM SWITCHES 0 AND 1. (AS SHOWN) 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. (AS SHOWN) 3. SET DESIRED CONTROL OPTIONS IN DATA ENTRY SWITCHES 0-15. 4. PRESS CONSOLE INTERRUPT.

DATA ENTRY SWITCHES C 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
• • • • •	1..TERMINATE PROGRAM . THIS OPTION IS

```
                    .  .    .       .        USED IN BOOTSTRAP MODE. (SEE SEC.3.5)
                    .  .    .       1.....BYPASS ALL PRINTOUTS WITH A PREFIX OF
                    .  .    .              A OR C.
                    .  .    1..............PRINT ONLY FIRST BAD DATA WORD.
                    .  1.....................RTNS 2 THRU 6 RUN TO EOT.
                    1........................CRC CHECK OPTION (SEE SECTION 3.3)
```

TABLE 1 ROUTINE SELECTION

```
SENSE/PROGRAM
C 1 2 3 4 5 6 7
C 1 C C C 1 1 1
```

1. SET FUNCTION 01 IN SENSE/PROGRAM SWITCHES 0 AND 1. (AS SHOWN)
2. SET PID IN SENSE/PROGRAM SWITCHES 2-7. (AS SHOWN)
3. SET DESIRED ROUTINES IN DATA ENTRY SWS.
4. PRESS CONSOLE INTERRUPT.
5. A STARTING ROUTINE CAN BE SELECTED BY --
   A. ENTER STARTING ROUTINE FOR A DRIVE OR DRIVES.
   B. START PROGRAM RUNNING.
   C. ENTER ROUTINE C FOR THE DRIVE OR DRIVES.

```
DATA ENTRY SWITCHES                 DESCRIPTION
C 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      X X X X X.....................ROUTINE TO BE LOOPED ON DRIVE ZERO.
                . . . . .            ENTER HEX NUMBER FROM 0 TO 11.
                . . . . .
                Y Y Y Y Y..ROUTINE TO BE LOOPED ON DRIVE ONE.
                           ENTER HEX NUMBER FROM 0 TO 11.
```

NOTE 1-IF THE NUMBER ENTERED FOR A DRIVE IS ZERO-THAT DRIVE WILL NOT LOOP BUT WILL RUN ALL ROUTINES IN SEQUENCE.

NOTE 2 THESE SWITCHES CAN BE CHANGED AT ANY TIME.

TABLE 2 DEVICE SELECTION

```
SENSE/PROGRAM
C 1 2 3 4 5 6 7
1 C C C C 1 1 1
```

1. SET FUNCTION 10 IN SENSE/PROGRAM SWITCHES 0 AND 1. (AS SHOWN)
2. SET PID IN SENSE/PROGRAM SWITCHES 2-7. (AS SHOWN)
3. SET DESIRED DRIVES IN DATA ENTRY SWS.
4. PRESS CONSOLE INTERRUPT.

```
DATA ENTRY SWITCHES                 DESCRIPTION
C 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
. .
. 1.....................................DO NOT RUN DRIVE ONE.(SEE NOTE 1)
.
1.....................................DO NOT RUN DRIVE ZERO.
```

NOTE 1-DRIVE SELECTION ENTRY IS REQUIRED ONLY IF IT IS NOT DESIRED TO RUN BOTH DRIVES.

NOTE 2-ONCE THE MONITOR BEGINS EXECUTION OF MTENT DRIVE SELECTION CAN ONLY BE CHANGED BY RESTARTING MTENT.

NOTE 3-IF THE SYSTEM HAS ONLY ONE DRIVE, A SPECIAL ENTRY OF 'FFFF' IS MADE ON THE EDIT CARD FOR DRIVE 1 AND THIS OPTION IS NOT USED.

3.4 PROGRAM HALTS

THIS PROGRAM WILL NEVER WAIT, UNLESS THE DIAGNOSTIC MONITOR OPTION OF HALT ON ERROR IS SELECTED. SEE DM USE PROCEDURE FOR THIS HALT.

3.5 PROGRAM TERMINATION

PROGRAM IS TERMINATED IF A SELECTED DRIVE IS NOT READY. PROGRAM CAN BE MANUALLY TERMINATED IN TWO WAYS.

1. BY THE MONITOR DEEXECUTE OPTION. THIS OPTION SHOULD BE USED WHEN RUNNING PROGRAMS IN THE OVERLAP MODE.
2. BY ENTERING BIT 15 OF FUNCTION 00 (TABLE 0). THIS OPTION MUST BE USED WHEN RUNNING PROGRAMS IN THE BOOTSTRAP MODE.

4. PRINTOUTS

4.1 COMMAND MESSAGES

```
C7CC CCCC (THE REST OF THE WORDS HAVE NO SIGNIFICANCE)
         DRIVE C IS SELECTED TO BE RUN BUT IS NOT READY.

C7CC CCC1 (THE REST OF THE WORDS HAVE NO SIGNIFICANCE)
         DRIVE 1 IS SELECTED TO BE RUN BUT IS NOT READY.

C7CC CCC2 (THE REST OF THE WORDS HAVE NO SIGNIFICANCE)
         NO DRIVE IS SELECTED TO BE RUN.
```

4.2 DATA MESSAGE

FIRST LINE

```
   A    B    C    D    E    F    G    H    I    J
C7CC CC01 CC11 XXXX CCCX XXXX XXXX XXXX XXXX XXXX XXXX
```

SECOND LINE

```
                  K    L    M    N    O
                 CCCX XXXX XXXX XXXX XXXX
```

PROGRAM HAS COMPLETED ONE PASS, ON THE DRIVE INDICATED.

A. MESSAGE NUMBER
B. ROUTINE NUMBER
C. RTN ADRS
D. UNIT NUMBER
E. NUMBER OF PROG PASSES
F. TOTAL NUMBER OF WRITES
G. TOTAL NUMBER OF READS
H. TOTAL NUMBER OF REWINDS
I. TOTAL NUMBER OF ERASES
J. TOTAL NUMBER OF PASSES THRU TAPE
K. UNIT NUMBER
L. NUMBER OF RECOVERED READ ERRORS
M. NUMBER OF RECOVERED WRITE ERRORS
N. NUMBER OF UNRECOVERABLE READ ERRORS
O. NUMBER OF UNRECOVERABLE WRITE ERRORS

4.3 ERROR PRINTOUTS

ALL PRINTOUTS PREFIXED 'A' CAN BE BYPASSED BY SWITCH 13 OF FNC. 00.

```
         RTN  RTN UNIT  REC  ERR
         NO.  ADDRS NO.  NO.  CTRL
C7CC AC01 XXXX XXXX CCCX XXXX YYRR
         RECOVERED WRITE ERROR.
```

* ERROR CONTROL IS THE NUMBER OF RETRYS ON THIS RECORD PRIOR TO RECOVERY. NUMBER OF RETRYS IS EQUAL TO YY MULTIPLIED BY TEN, PLUS RR.

```
                                DSW
                                RECEIVED
C7CC AC02 XXXX XXXX CCCX XXXX XXXX
         DSW SHOWS CORRECTABLE WRITE ERROR.

                                ERROR
                                CONTROL
C7CC AC03 XXXX XXXX CCCX XXXX YYRR
         RECOVERED READ ERROR.
```

* ERROR CONTROL IS THE NUMBER OF RETRYS ON THIS RECORD PRIOR TO RECOVERY. NUMBER OF RETRYS IS EQUAL TO YY MULTIPLIED BY TEN, PLUS RR.

CSW
RECEIVED
C7CC ACC4 XXXX XXXX CCCX XXXX XXXX
DSW SHOWS CORRECTABLE READ ERROR.

ERROR
CONTROL
C7CO ACC5 XXXX XXXX CCCX XXXX XYXX
TRIED TO BACKSPACE PAST CLEANER, BUT REACHED LOAD POINT. ERROR CONTROL IS THE TOTAL NUMBER OF TIMES THE PROGRAM TRIED TO BACKSPACE PAST THE TAPE CLEANER. (ON THIS RECORD)

EXPEC-REC.
TED NO.
REC. READ
NO.
C7OO ACC6 XXXX XXXX CCCX XXXX XXXX
RECORD ID SHOWS WRONG RECORD READ

NOTE
PRINTOUTS PREFIXED BY 'E' CAN BE BYPASSED ONLY THROUGH THE DIAGNOSTIC MONITOR 'BYPASS ERROR PRINT' SWITCH OPTION.

RTN RTN UNIT
NO. ADDRS NO.
C7CC EC01 XXXX XXXX CCCX
DOUBLE INTERRUPT OCCURRED. (REFER TO ERROR NOTE)

FNC
AND
MOD
C7CC EC02 XXXX XXXX CCCX XXXX
FUNCTION OR MODIFIER WAS ILLEGAL. (REFER TO ERROR NOTE)

REC. DSW
NO.
C7CC EC03 XXXX XXXX CCCX XXXX XXXX
DSW SHOWS UNCORRECTABLE WRITE ERROR. (REFER TO ERROR NOTE)

REC. DSW
NO.
C7CO EC04 XXXX XXXX CCCX XXXX XXXX
DSW SHOWS UNCORRECTABLE READ ERROR, 100 TRIES ON A CORRECTABLE READ ERROR OR WRONG RECORD READ HAVE FAILED. (REFER TO ERROR NOTE)

C7CC EC05 XXXX XXXX CCCX
THE TAPE DRIVE WAS NOT AVAILABLE FOR TOO LONG A PERIOD, THE PROGRAM IS LOOPING. (REFER TO ERROR NOTE)

LAST
FNC +
MOD
C7CC EC06 XXXX XXXX CCCX XXXX
LOST INTERRUPT (REFER TO ERROR NOTE)

REC. WD.EXPEC-RECEIVED
NO. NO. TED DATA
DATA
C7CO EC07 XXXX XXXX CCCX XXXX XXXX XXXX XXXX
DATA READ DID NOT COMPARE WITH DATA WRITTEN.

NOTE

SINCE THE FIRST WORD OF DATA ON ALL RECORDS IS A RECORD

I.D., THE FIRST DATA WORD CHECKED BY THE COMPARE ROUTINE IS WORD 2. REFERENCE PRINTOUT AC06 FOR RECORD I.D. PRINTOUT.

REC. CSW
NO.
C7CO EC08 XXXX XXXX CCCX XXXX XXXX
NO END OF TABLE INTERRUPT WHEN CHAINING.

REC. CSW
NO.
C7CO EC09 XXXX XXXX CCCX XXXX XXXX
NO END OF OPERATION INTERRUPT AFTER END OF TABLE INTERRUPT WHEN CHAINING.

REC. CSW
NO.
C7CC ECCA XXXX XXXX CCCX XXXX XXXX
NO COMMAND REJECT INTERRUPT WHEN EXPECTED.

REC. CSW
NO.
C7CC ECCB XXXX XXXX CCCX XXXX XXXX
WRONG LENGTH RECORD DID NOT OCCUR AS EXPECTED.

REC. CSW
NO.
C7CO ECCC XXXX XXXX CCCX XXXX XXXX
STORAGE PROTECT VIOLATION DID OCCUR WHEN EXPECTED.

REC. NO.EXPEC- WC.
NO. CT. TED FOUND
WC.
C7CO ECCD XXXX XXXX CCCX XXXX XXXX XXXX XXXX
STORAGE PROTECTED WC. WAS DESTROYED BY READ.

C7CO ECCE XXXX XXXX CCCX
PROGRAM STOP DID NOT OCCUR.

REC. DSW
NO.
C7CO ECCF XXXX XXXX CCCX XXXX XXXX
WRONG LENGTH RECORD DID NOT OCCUR.

EXPEC- WD.
TED CT.
WD. RECEIVED
CT.
C7CO EC1C XXXX XXXX CCCX XXXX XXXX
WORD COUNT SENSED WAS NOT AS EXPECTED.

REC. DSW
NO.
C7CC EC11 XXXX XXXX CCCX XXXX XXXX
READING TAPE MARK DID NOT SET DSW BIT.

EXPEC-RECEIVED
TED T.M.
T.M. DATA
DATA
C7CO EC12 XXXX XXXX CCCX XXXX XXXX
READING TAPE MARK BROUGHT IN INCORRECT DATA.

REC. DSW
NO.
C7CC EC13 XXXX XXXX CCCX XXXX XXXX
COULD NOT CHANGE DENSITY ON 7 TRACK DRIVE.

REC. DSW

NC.
C?0C EC14 XXXX XXXX CCCX XXXX XXXX
NO LEGAL BIT ON AT INTERRUPT. (REFER TO ERROR NOTE)

EXPEC- WD.
TED CT.
WD. RECEIVED
CT.
C7CC EC15 XXXX XXXX CCCX XXXX XXXX
UNABLE TO LOAD WORD COUNTER PROPERLY.

***** ERROR NOTE *****

THESE ERROR PRINTOUTS WILL CAUSE THE PROGRAM TO TERMINATE THE ROUTINE THAT CAUSED THE ERROR AND START THE NEXT SEQUENTIAL ROUTINE. (UNLESS RUNNING IN THE LOOP ROUTINE MODE.

5. COMMENTS

ON ANY READ OPERATION PERFORMED BY THIS PROGRAM, THE POSSIBILITY EXISTS, OF BAD PARITY COMING FROM THE TAPE, DUE TO BIT PICKUP OR DROPOUT WITHIN THE CHANNEL ITSELF. IF THIS OCCURS, THE WORD WILL ENTER MEMORY WITH BAD PARITY. THIS ERROR WILL NOT BE DISCOVERED UNTIL SOME TIME LATER, WHEN THE WORD IS BROUGHT OUT OF MEMORY FOR COMPARISON WITH DATA EXPECTED. AT THIS TIME AN INTERNAL ERROR INTERRUPT WILL OCCUR, BUT AN INDICATOR WILL BE SET TO BYPASS THE ERROR WAIT IN THE DIAGNOSTIC MONITOR. THE ONLY INDICATION OF THIS TROUBLE WILL BE A PRINTOUT OF INCORRECT DATA WITH NO PRECEDING RECOVERABLE READ PRINTOUT. THIS POSSIBILITY SHOULD BE KEPT IN MIND WHEN EXAMINATION OF PRINTOUTS IS MADE.

THIS PROGRAM WRITES, AS THE FIRST WORD OF DATA ON ALL RECORDS, A RECORD I.D. WHEN A RECORD IS READ THE RECORD I.D. IS CHECKED AGAINST EXPECTED. IF THESE ARE NOT THE SAME PRINTOUT A0C6 WILL OCCUR. THE REMAINING DATA WORDS ARE THEN CHECKED AND IF NOT AS EXPEXTED THE PRINTOUT E007 WILL OCCUR. IT SHOULD BE REALIZED THEREFORE THAT RECORD I.D. IS CONSIDERED BY THE PROGRAM TO BE DATA WORD 1 AND THE REMAINING DATA IS WORDS 2 THROUGH THE NUMBER OF WORDS USED BY THE ROUTINE.

NOTE

WHEN THE RECORD I.D. IS FOUND TO BE IN ERROR, THE EXPECTED I.D. IS SET EQUAL TO THE RECEIVED I.D. IN AN EFFORT TO SYNC THE PROGRAM TO THE ACTUAL RECORD NUMBER IT IS AT ON THE TAPE. THIS WILL ALLOW RECOVERY AND CONTINUATION OF THE PROGRAM EVEN IF RECORDS ARE INTERMITTENTLY SKIPPED DUE TO HARDWARE TROUBLE.

5.1 PROGRAM DESCRIPTION

THE MAGNETIC TAPE FUNCTION TEST CONSISTS OF A MAGNETIC TAPE MONITOR ROUTINE, A SERIES OF COMMON MAGNETIC TAPE SUBROUTINES AND A SERIES OF INDIVIDUAL TESTS.

THERE ARE FIVE IMPORTANT TABLES AROUND WHICH ALL ROUTINES ARE ORIENTED.

DST 0 AND DST 1 - MAGNETIC TAPE DEVICE STATUS TABLE. ONE FOR EACH TAPE DRIVE.
COMMON - CONTAINS COMMON CONSTANTS AND COMMON ROUTINE CALLS.
DRCTB AND DR1TB - CONTAINS 'CONSTANTS' AND 'RETURNS' UNIQUE TO EACH DRIVE.

.2 TEST ROUTINES

DEC RTN =	HEX RTN =	DESCRIPTION
1	1	INITIAL CONDITIONS CHECK 1. REWIND 2. CHECK FOR LOAD POINT 3. CHECK FOR READY.
2	2	WRITE-BACKSPACE-READ 500 RECORDS OR TO END OF TAPE USING 20 WDS PER RECORD AND ALL ONES PATTERN. WRITE-READ TESTS. STARTING AT LOAD POINT WRITE 500 RECORDS OR TO EOT, REWIND, READ ALL RECORDS WRITTEN AND CHECK DATA. ROUTINES 3 THROUGH 6 HAVE THEIR RECORD ID AS THE FIRST WORD OF EACH RECORD.
3	3	20 WORDS PER RECORD USING FLOATING ZERO PATTERN.
4	4	20 WORDS PER RECORD USING FLOATING ONES PATTERN.
5	5	C8 WORDS PER RECORD USING ALL ZEROS PATTERN.
6	6	C8 WORDS PER RECORD USING ALTERNATE ONES PATTERN.
		SPECIAL TESTS
7	7	WRITE USING CHAINING, READ BACK AND CHECK DATA.
8	8	CAUSE COMMAND REJECT BY ISSUING A COMMAND TO A BUSY DRIVE.
9	9	CAUSE COMMAND REJECT BY ISSUING A COMMAND TO THE UNSELECTED DRIVE.
10	A	CAUSE COMMAND REJECT BY BACKSPACING INTO LOAD POINT.
11	B	CAUSE COMMAND REJECT BY REWINDING WHEN AT LOAD POINT.
12	C	FORCE SPV STOP BY READING INTO STORAGE PROTECTED LOCATIONS. ALSO CHECK FOR WRONG LENGTH RECORD.
13	D	FORCE PROGRAM STOP BY ISSUING A SENSE WITH BIT 12 TO A MOVING DRIVE. ALSO CHECK WRONG LENGTH RECORD, AND PROPER WORD COUNTER LOADING.
14	E	FORCE WRONG LENGTH RECORD BY READING MORE WORDS THAN WERE WRITTEN. CHECK THAT WORD COUNT WAS PROPERLY LOADED AND STEPPED.
15	F	WRITE AND READ A TAPE MARK. CHECK BOTH DATA AND SENSE WORD.
16	10	7 TRACK FEATURE TESTS THE FIRST WORD OF EACH RECORD IS THE RECORD ID AND DOES NOT CONTAIN THE PATTERN WORD. 1. WRITE ONE RECORD OF 20 WORDS AT 556 BPI, 2 BYTES PER WORD AND ODD PARITY. BACKSPACE, READ THE RECORD AND CHECK THE DATA. 2. WRITE ONE RECORD OF 20 WORDS AT 556 BPI, 2 BYTES PER WORD AND EVEN PARITY. BACKSPACE, READ THE RECORD AND CHECK THE DATA. 3. WRITE ONE RECORD OF 20 WORDS AT 556 BPI, 3 BYTES PER WORD AND ODD PARITY. BACKSPACE, READ THE RECORD AND CHECK THE DATA. 4. WRITE ONE RECORD OF 20 WORDS AT 556 BPI, 3 BYTES PER WORD AND EVEN PARITY. BACKSPACE, READ THE RECORD AND CHECK THE DATA. 5. BACKSPACE AND READ AT 200 BPI, 3 BYTES PER WORD AND EVEN PARITY. CHECK THE DSW FOR TAPE DATA ERROR, OR COMPLETE, TAPE DIAGNOSTIC ERROR AND WRONG LENGTH RECORD. 6. WRITE ONE RECORD OF 20 WORDS AT 200 BPI, 3 BYTES PER WORD AND EVEN PARITY. BACKSPACE, READ THE RECORD AND CHECK THE DATA.
17	11	FORCE WRONG LENGTH RECORD BY READING FEWER WORDS THAN WERE WRITTEN. CHECK FOR PROPER LOADING AND STEPPING OF THE WORD COUNTER.

5.3 COMMON SUBROUTINES

EACH SUBROUTINE ASSUMES THAT INDEX REGISTER 1 CONTAINS THE BASE ADDRS OF THE DRTABLE, INDEX REGISTER 2 CONTAINS THE BASE ADDRESS OF THE PROPER DST TABLE, AND XR3 THE BASE ADDRESS OF THE COMMON TABLE.

NAME CALL

ESP BSI 3 14
USE- BACKSPACE ONE TAPE RECORD

CKAVL BSI 3 41
USE- CHECKS THE DRIVE AVAILABLE SWITCH FOR BOTH DRIVES. IF EITHER SWITCH IS EQUAL TO ONE THE ROUTINE LOOPS THROUGH THE DIAGNOSTIC MONITOR. THE ROUTINE RETURNS TO THE CALLING ROUTINE WHEN BOTH DRIVE AVAILABLE SWITCHES ARE EQUAL TO ZERO.

CKBSY BSI 3 38
USE- CHECKS THE DRIVE BUSY SWITCH FOR BOTH DRIVES. IF EITHER SWITCH IS EQUAL TO ONE THE ROUTINE LOOPS THRU THE MONITOR. THE ROUTINE COUNTS EACH MONITOR REENTRY AND IF THE COUNT EXCEEDS A MAXIMUM, LOST INTERRUPT IS PRINTED. THE ROUTINE RETURNS TO THE CALLING ROUTINE WHEN BOTH SWITCHES ARE EQUAL TO ZERO.

CCMCC BSI 3 5C
USE- A COMMON SET UP ROUTINE WHICH-
1. BRANCHES TO CKBSY ROUTINE.
2. SETS THE DRIVE BUSY SWITCH TO ONE.
3. BRANCHES TO CKAVL ROUTINE.
4. SETS THE DRIVE AVAIL. SWITCH TO ONE.
5. SETS THE HEXADECIMAL CONSTANT OF 4014 AS THE WORD COUNT IN THE I/O AREA.
6. SETS THE DECIMAL CONSTANT OF 20 AS THE WORD COUNT IN DST TABLE POSITION 15.
7. SETS THE AREA CODE AND DRIVE SELECTION CONSTANT FOR THE INTERRUPT ROUTINES USE.
8. RETURNS TO THE CALLING ROUTINE.

CCMD1 BSI 3 53
USE- A COMMON SET UP ROUTINE WHICH-
1. BRANCHES TO CKAVL ROUTINE.
2. SETS DRIVE AVAIL. SW. TO ONE
3. SETS THE HEXADECIMAL CONSTANT OF 4014 AS THE WORD COUNT IN THE I/C AREA.
4. SETS THE DECIMAL CONSTANT OF 20 AS THE WORD COUNT IN DST TABLE POSITION 15.
5. SETS THE AREA CODE AND DRIVE SELECTION CONSTANT FOR USE BY THE INTERRUPT ROUTINE.
6. RETURNS TO THE CALLING ROUTINE.

CCMC3 BSI 3 73
DESIRED FUNCTION AND MODIFIER MUST BE IN THE A REG.
USE- A COMMON SET UP ROUTINE WHICH-
1. STORES FUNCTION AND MODIFIER IN THE DST TABLE AT POSITIONS 2 AND 3.
2. BUILDS THE ICCC CONTROL WORD.
3. GETS THE WORD COUNT FROM DST TABLE POSITION 15, ADDS A NO END OF TABLE INTERRUPT BIT AND SETS IT IN THE I/O AREA.
4. SETS THE RECORD COUNT FROM DST TABLE POSITION 10 AS THE FIRST DATA WORD IN THE I/O AREA.
5. SETS THE DRIVE BUSY SWITCH TO ONE.
6. SETS THE AREA CODE AND DRIVE SELECTION CONSTANT FOR USE BY THE INTERRUPT ROUTINE.
7. ISSUES THE COMMAND TO THE TAPE DRIVE.
8. EXITS TO THE DIAGNOSTIC MONITOR.

DSW BSI 3 32
USE- SENSES DSW AND PLACES DSW INTO THE ACCUMULATOR

ERA BSI 3 29
USE- TAPE ERASE

EXIT BSI 3 76
CLEARS DRIVE AVAILABLE SWITCH AND RETURNS TO MT MON.

MER BSI 3 11
CC MESSAGE ID
CC LINE # AND FORM #
USE- SETS UP TABLE TO BE PRINTED AND CALLS ON MONITOR ERROR ROUTINE.

MLG BSI 3 C8
CC MESSAGE ID
CC LINE # AND FORM #
USE- SETS UP TABLE TO BE PRINTED AND CALLS ON MONITOR LOG ROUTINE.

MRCD BSI 3 44
USE- THIS ROUTINE OBTAINS THE PATTERN WORD FROM THE PROPER DST TABLE TO BE COMPARED WITH THE DATA READ. THE STARTING LOCATION IS SPECIFIED BY THE I/C ADDRESS OBTAINED FROM THE DST TABLE. THE ROUTINE CONTINUES UNTIL THE NUMBER OF WORDS SPECIFIED IN THE DST WORD COUNT HAVE BEEN COMPARED. IF A NONCOMPARE IS FOUND, THE ERROR ROUTINE (MER) IS ENTERED.

MRSC BSI 3 47
CC PATTERN WORD
USE- SET THE CORE LOCATIONS IN THE I/C AREA TO THE PATTERN SPECIFIED BY THE CALLING SEQUENCE.

MTI INTERRUPT ROUTINE
USE- SENSES THE DSW, FINDS I/C ROUTINE THAT INITIATED I/C OPERATION AND SETS UP TO RETURN TO THE OPERATION COMPLETE SECTION OF THE SELECTED I/C ROUTINE. ALSO SENSES AND SAVES THE WORD COUNTER AND CLEARS DRIVE BUSY SWITCH.

RDT BSI 3 20
CC FORMAT (C-2)

C = FLOATING ZEROS
1 = FLOATING ONES
2 = ALL ONES, ALL ZEROS OR ALTERNATING ONES

USE- READ MAGNETIC TAPE ROUTINE. NUMBER OF WORDS TO BE READ AND LOCATION OF INPUT AREA ARE TAKEN FROM THE DST TABLE. AFTER READ IS COMPLETE, THE RTN ENTRS RTN MROD TO CHECK DATA READ.

RWD BSI 3 17
USE- REWINDS THE UNIT SPECIFIED BY INDEX REGISTER 1.

STAC BSI 3 9C
USE- SETS CR SELECTION FOR USE BY THE INTERRUPT ROUTINE.

STPST BSI 3 35
CC ENTRY TO SET
USE- PASSES CONTROL TO THE LOCATION SPECIFIED IN THE CALLING SEQUENCE. THE PASSING OF CONTROL IS DONE BY WAY OF THE DIAGNOSTIC MONITOR'S MLSCF TABLE. THE ROUTINE USES A PUSH UP ENTRY TECHNIQUE.

WRTM BSI 3 23
USE- WRITES A TAPE RECORD. THE LOCATION OF THE OUTPUT AREA AND NUMBER OF WORDS TO BE WRITTEN ARE TAKEN FROM THE PROPER DST TABLE.

WTM BSI 3 26
USE- A TAPE MARK IS WRITTEN ON THE UNIT SPECIFIED BY INDEX REGISTER 1.

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.

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).

	ENTRY 1 DDEF				ENTRY 2				ENTRY 3			
COLUMN	1	2 3	4 5	6 7	8 9	10 11	12 13	14 15	16 17	18 19	20 21	22 23 24 25	26 27 28 29	30 31 32 33	34 35 36 37	38 39 40 41	42 43 44 45	46 47 48 49	50 51 52 53	54 55 56 57	58 59 60 61	62 63 64 65	66 67 68 69	70 71 72 73	74 75 76 77	78 79 80
		PROGRAM ID		CARD SEQUENCE NUMBER		NUMBER OF EDIT ENTRIES	INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)	NUMBER OF TRACKS - DRIVE 0 0000 = 9 TRACKS 0001 = 7 TRACKS			NUMBER OF TRACKS - DRIVE 1 0000 = 9 TRACKS 0001 = 7 TRACKS													
CARD 0	E	0 7	0 0	E	D	0 0	0 0 0 3	0 2	0 4	0 0 0 0			F F F F													
END	E	0 7	0 0	F	F	F F																				

CARD 0 MUST CONTAIN THE FULL 3 ENTRIES. IF YOUR SYSTEM HAS ONLY ONE DRIVE, ENTER "FFFF" FOR DRIVE ONE AND THE CORRECT ENTRY FOR DRIVE 0.

CARD END IS THE "END EDIT CARD". PUNCH EXACTLY AS IS SHOWN.

NOTE: ONLY TWO DRIVES MAY BE RUN AT A TIME WITH THIS PROGRAM.

```
07FF                     ORG    *&2047
                   *
                   *              EQUATE TABLES
                   *
                   *
012C 0             BEGIN EQU    300
012D 0             START EQU    BEGIN&1
012E 0             END   EQU    START&1
012F 0             LOG   EQU    END&1
0130 0             ERROR EQU    LOG&1
0131 0             REQDV EQU    ERROR&1
0132 0             RELDV EQU    REQDV&1
0133 0             CKCR  EQU    RELDV&1
07FF 0 0700        PID   DC     /0700     PROG ID
0800 0 0000        RID   DC     0         ROUTINE NUMBER
0801 0 0000        RAD   DC     0         ROUTINE ADRS
0802 0 0000        SW0   DC     0         SW FNC 00
0803 0 0000        SW1   DC     0                01
0804 0 0000        SW2   DC     0                10
0805 0 0000        SW3   DC     0                11
0806 1 08AC        IPA   DC     MTRST     INIT ADRS
0807 1 08AC        LPA   DC     MTRST     LOOP ADRS
0808 1 08CD        EPA   DC     MTEND     END PROG ADRS
0809 0 0000        MLSCF DC     0         LOST INT VEC
080A 0 0000              DC     0         INTERRUPT ENTRY ONLY
080B 0 0000              DC     0         INTERRUPT ENTRY ONLY
080C 0 0000              DC     0         MAIN LINE ENTRY ONLY
080D 0 0000              DC     0         MAIN LINE ENTRY ONLY
080E 0 FFFF        TERM  DC     /FFFF
080F 1 0FFA              DC     PEND      HIGH LIMIT
0810 0 0000              DC     0
0811 0 0000              DC     0
0812 0 0000              DC     0
0813 0 0000              DC     0
0814 0 0000              DC     0
0815 0 0000        EDIT  DC     0         INTR LVL, ILSW, CH
0816 0 0000        EDIT1 DC     0         NUMBER TRACKS DR 0
0817 0 0000        EDIT2 DC     0         NUMBER TRACKS DR 1
                   * *** *** *** *** *** *** *** *** *** *** ***
                   *
                   *              THIS IS THE INTERRUPT RTN
                   *
                   * *** *** *** *** *** *** *** *** *** *** ***
0818 0 0000        INTSW DC     0         NTRPT PENDING SW
0819 0 0000        MTIO  DC     0         AREA CODE STORAGE
081A 0 0000        MTI   DC     0                                 IE
081B 0 693F              STX    1 MTIS&1  SAVE INDEX REGS
081C 0 6A40              STX    2 MTIS&3
081D 1 6500 0909         LDX  L1 DR1TB    SET IXING = DR 1
081F 1 6600 0956         LDX  L2 DST1     *
0821 0 1010              SLA    16        CLEAR A REG
0822 0 D0F5              STO    INTSW     RESET NTRPT SW
0823 0 C05C              LD     MTDSW     BUILD SENSE DSW
0824 1 F400 08CC         EOR  L ACMT
0826 0 D05A              STO    MTDSW&1   SAVE
0827 0 0858              XIO    MTDSW     SENSE-NON RESETABLE
0828 0 C058              LD     MTDSW&1
0829 0 F124              EOR    1 36
082A 0 D056              STO    MTDSW&1
082B 0 0854              XIO    MTDSW     SENSE-RESETABLE
082C 0 D04C              STO    MTIX1     SAVE
082D 1 C400 08CC         LD   L ACMT      GET DR SELECTION
082F 0 1805              SRA    5
0830 1 4C04 0836         BSC  L MTIC,E    BRANCH = DR 0
0832 1 6500 08D6         LDX  L1 DR0TB    SET IXING TO DR 0
0834 1 6600 0939         LDX  L2 DST0
                   *
```



```
0836 0 C042        MTIC  LD     MTIX1       GET SENSE WD
0837 0 D208              STO  2 8           SET IN DST
0838 0 E041              AND    MTIX2       CK FOR LEGAL INT
0839 1 4C18 0873         BSC  L MTIAC,&-    BRANCH IF ILLEGAL
                   *
                   *           SENSE WD CTR
                   *
083B 0 C045        MTIAD LD     MTDSW&1
083C 0 F042              EOR    SWC
083D 0 D043              STO    MTDSW&1
083E 0 0841              XIO    MTDSW        ISSUE SENSE
083F 0 D205              STO  2 5            SAVE WD CT
                   *
                   *           DETERMINE MLSCF ENTRY
                   *
0840 0 C202        MTIT  LD   2 2           GET FUNCTION
0841 0 1005              SLA    5
0842 0 180D              SRA    13
0843 0 D00A              STO    MTIC1&1     SAVE
0844 0 9124              S    1 36          SUB ONE
0845 0 4818              BSC    &-          WAS FNC # 1
0846 0 7019              MDX    SPRT1       YES
0847 1 9400 0975         S    L MTTWO&1     SUB 3
0849 0 4818              BSC    &-          WAS FNC 4
084A 0 701F              MDX    MTICL       YES
084B 0 1010              SLA    16          CLEAR FNC
084C 0 D202              STO  2 2
                   *
                   *           SET MLSCF ENTRY
                   *
084D 0 6700 0000   MTIC1 LDX  L3 0          IX 3 # FNC
084F 1 C700 0882         LD   L3 FNCTB         GET ENTRY
0851 0 D003        MTIR1 STO    MTIR        SAVE
0852 1 6700 0974         LDX  L3 MTTWO      IX3#ADRS COMMON TBL
                   *
0854 0 4357              BSI  3 87          GO SET MLSCF ENTRY   SRC
0855 0 0000        MTIR  DC     0
0856 0 1010              SLA    16
0857 0 D21A              STO  2 26          SET IN DR BUSY SW
0858 0 D073              STO    ACMT        CLEAR DR SEL
0859 0 D0AF              STO    MLSCF       CLEAR LOST INT VEC
085A 0 6500 0000   MTIS  LDX  L1 0          RESTORE IX REGS
085C 0 6600 0000         LDX  L2 0
085E 1 4C80 081A         BSC  I MTI         EXIT                 IX
                   *
                   *           FUNCTION WAS ONE
                   *
0860 1 C400 09C4   SPRT1 LD   L SPFNC&1     GET 0200
0862 0 D202              STO  2 2           SET FNC # 2
0863 0 C015              LD     MTIX1       GET SENSE WORD
0864 0 D219              STO  2 25          SET IN DST
0865 0 1009              SLA    9           CHECK OP COMPLETE
0866 1 4C28 0840         BSC  L MTIT,Z&
0868 0 D0AF              STO    INTSW
0869 0 70F0              MDX    MTIS
                   *
                   *           FUNCTION FOUR ENTRY
                   *
086A 0 D202        MTICL STO  2 2           CLEAR FNC
086B 0 C203              LD   2 3           GET MODIFIER
086C 0 E00E              AND    MTIX3
086D 0 D001              STO    MTIE1&1     SAVE
086E 0 6700 0000   MTIE1 LDX  L3 0          IX 3 # MOD
0870 1 C700 088A         LD   L3 FNCCL         GET ENTRY
0872 0 700E              MDX    MTIR1
                   *
                   *           HAD AN ILLEGAL INTRRUPT
                   *
```

```
0873 0 C008        MTIAC LD     MTIX4      GET ENTRY                          80701380
0874 0 70DC              MDX    MTIR1                                         80701390
                   *                                                         80701400
                   *                  RETURN TO PRINT ON ILLEGAL             80701410
                   *                  INTERRUPT                              80701420
                   *                                                         80701430
0875 0 4308        MTIAE BSI    3 11       GO TO PRINT VIA MER  SRC           80701440
0876 0 E014              DC     /E014      ID 14                              80701450
0877 0 0002              DC     /0002      LINE 0 - FORM 2                    80701460
0878 0 7020              MDX    DBIN1      GO TO RTN EXIT                     80701470
                   *                                                         80701480
                   *                  CONSTANTS                              80701490
                   *                                                         80701500
0879 0 0000        MTIX1 DC     0          SENSE WD STORAGE                   80701510
087A 0 3040        MTIX2 DC     /3040      LEGAL INT CK                       80701520
087B 0 0007        MTIX3 DC     /0007      MODIFIER SAVE                      80701530
087C 1 0875        MTIX4 DC     MTIAE                                         80701540
087E   0000              BSS  E 0                                            80701550
087E 0 0000        SELSW DC     0                                             80701560
087F 0 0011        SWC   DC     /0011      SENSE WD CTR MOD                   80701570
0880 0 0700        MTDSW DC     /0700      SENSE IOCC                         80701580
0881 0 0000              DC     0                                             80701590
                   *                                                         80701600
                   *                  FUNCTION TRANSFER VECTORS              80701610
                   *                                                         80701620
0882 1 0892        FNCTB DC     DBINT      000 # DBL INTRPT                   80701630
0883 1 0860              DC     SPRT1      001 # EXPECT 2 INTRS               80701640
0884 1 089A              DC     SPINT      010 # SPECIAL RETURN               80701650
0885 1 0896              DC     MTIER      011 # ERROR                        80701660
0886 1 0896              DC     MTIER      100 # ERROR                        80701670
0887 1 0A73              DC     WRTI       101 # INIT WRT                     80701680
0888 1 0AD8              DC     RDTI2      110 # INIT RD                      80701690
0889 1 0896              DC     MTIER      111 # ERROR                        80701700
                   *                                                         80701710
                   *                  MODIFIER TRANSFER VECTORS               80701720
                   *                                                         80701730
088A 1 0896        FNCCL DC     MTIER      000 # ERROR                        80701740
088B 1 0AC3              DC     WTMAB      001 # WRT TP MRK                   80701750
088C 1 0AB8              DC     ERAB       010 # ERASE                        80701760
088D 1 0B71              DC     BSPI2      011 # BSP                          80701770
088E 1 0B8A              DC     RWDIR      100 # REWIND                       80701780
088F 1 0896              DC     MTIER      101 # ERROR                        80701790
0890 1 0896              DC     MTIER      110 # ERROR                        80701800
0891 1 0896              DC     MTIER      111 # ERROR                        80701810
                   *                                                         80701820
                   *                  HAD A DOUBLE INTERRUPT                 80701830
                   *                                                         80701840
0892 0 4308        DBINT BSI    3 11       GO TO PRINT VIA MER  SRC           80701850
0893 0 E001              DC     /E001      ID 01                              80701860
0894 0 0009              DC     /0009      LINE 0  FORM 9                     80701870
0895 0 7003              MDX    DBIN1      GO TO RTN EXIT                     80701880
                   *                                                         80701890
                   *                  FUNCTION OR MODIFIER WRONG             80701900
                   *                                                         80701910
0896 0 4308        MTIER BSI    3 11       GO TO PRINT VIA MER  SRC           80701920
0897 0 E002              DC     /E002      ID 02                              80701930
0898 0 0009              DC     /0009      LINE 0  FORM 9                     80701940
0899 0 434C        DBIN1 BSI    3 76       GO TO RTN EXIT                     80701950
                   *                                                         80701960
                   *                  SPECIAL RTN RUNNING                    80701970
                   *                                                         80701980
089A 0 C21C        SPINT LD     2 28       GET RTN NUMBER                     80701990
089B 0 8004              A      TAG02      ADD TABLE ADDRESS LESS 7           80702000
089C 0 D002              STO    SPIAB+1    PLACE IN BRANCH INSTR.             80702010
                   *                                                         80702020
                   *                                                         80702030
                   *                                                         80702040
089D 0 412E              BSI    1 46       SET IX 3             SRC           80702050
```



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089E 0 4C80 0000   SPIAB BSC  I *-*        GO TO RETURN                       80702060
                   *                                                         80702070
                   *                  TABLE                                  80702080
                   *                                                         80702090
08A0 1 089A        TAG02 DC     *-7        TABLE ADDRESS LESS 7               80702100
08A1 1 0E70        SPITB DC     F07IR      ROUTINE 7                          80702110
08A2 1 0EB0              DC     F08IR                 8                    80702120
08A3 1 0EB0              DC     F08IR                 9                    80702130
08A4 1 0896              DC     MTIER                 10                   80702140
08A5 1 0EB0              DC     F08IR                 11                   80702150
08A6 1 0EFD              DC     F0EIR                 12                   80702160
08A7 1 0F3E              DC     F0FIR                 13                   80702170
08A8 1 0F73              DC     F10IR                 14                   80702180
08A9 1 0896              DC     MTIER                 15                   80702190
08AA 1 0FE3              DC     F12IR                 16                   80702200
08AB 1 0F73              DC     F10IR                 17                   80702210
                   * *** *** *** *** *** *** *** *** *** *** *** ***         80702220
                   *                                                         80702230
                   *                  INITIALIZATION ROUTINE                 80702240
                   *                                                         80702250
                   * *** *** *** *** *** *** *** *** *** *** *** ***         80702260
08AC 0 0000        MTRST DC     0                                       SE   80702270
08AD 0 1010              SLA    16         CLEAR DST TABLES                   80702280
08AE 0 633A              LDX    3 58                                          80702290
08AF 1 D700 0938   MON00 STO    L3 DST0-1                                     80702300
08B1 0 73FF              MDX    3 -1                                          80702310
08B2 0 70FC              MDX    MON00                                         80702320
                   *                                                         80702330
                   *                  SET NECESSARY DST VALUES               80702340
                   *                                                         80702350
08B3 1 6780 0816         LDX    I3 EDIT1   IX3 # NO TRACKS/DR 0               80702360
08B5 1 6F00 0939         STX    L3 DST0    SET NO TRACKS/DR 0                 80702370
08B7 1 C700 08CA         LD     L3 MONXC       EXPECTED TM DATA               80702380
08B9 0 D039              STO      DR0TB&29 SET FOR DR 0                      80702390
08BA 1 6780 0817         LDX    I3 EDIT2   IX3 # NO TRACKS/DR 1               80702400
08BC 1 6F00 0956         STX    L3 DST1    SET NO TRACKS/ DR 1                80702410
08BE 1 C700 08CA         LD     L3 MONXC       EXPECTED TM DATA               80702420
08C0 0 D065              STO      DR1TB&29 SET FOR DR 1                      80702430
08C1 0 1010              SLA    16         ZERO ACCUM                         80702440
08C2 0 D0B8              STO      SELSW    CLEAR SEL SW                       80702450
08C3 0 D008              STO      ACMT     CLEAR DR SEL                       80702460
08C4 1 6500 09EC         LDX    L1 MON03   SET RETURN                         80702470
08C6 1 6D00 0809         STX    L1 MLSCF                                      80702480
08C8 1 4C80 08AC         BSC    I  MTRST   EXIT                          SX   80702490
08CA 0 1300        MONXC DC     /1300      9 TRACK TM                         80702500
08CB 0 3C00              DC     /3C00      7 TRACK TM                         80702510
08CC 0 0000        ACMT  DC     0          AREA CODE                          80702520
                   * *** *** *** *** *** *** *** *** *** *** *** ****        80702530
                   *                                                         80702540
                   *                  END PROGRAM ROUTINE                    80702550
                   *                                                         80702560
                   * *** *** *** *** *** *** *** *** *** *** *** ****        80702570
08CD 0 0000        MTEND DC     0                                       SE   80702580
08CE 1 4400 0C1C         BSI    L  SETX4   SET IXING                    SRC  80702590
                   *                                                         80702600
                   *                                                         80702610
08D0 0 4351              BSI    3 81       GO RELEASE DEVICE        SRC      80702620
08D1 1 4C80 08CD         BSC    I  MTEND                            SX       80702630
                   * *** *** *** *** *** *** *** *** *** *** *** ****        80702640
                   *                                                         80702650
                   *                  CALL ON MONITOR FOR EDIT               80702660
                   *                                                         80702670
                   * *** *** *** *** *** *** *** *** *** *** *** ****        80702680
                   ************************************************        80702690
08D3 0 4480 012C   MTBEG BSI  I  BEGIN                                  *    80702700
08D5 1 07FF              DC     PID                                    *    80702710
                   ************************************************        80702720
                   * *** *** *** *** *** *** *** *** *** *** *** ****        80702730
```

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                        *                                                    80702740
                        *                DRIVE 0 TABLE OF CONSTANTS          80702750
                        *                AND RETURNS                         80702760
                        *                                                    80702770
                        * *** *** *** *** *** *** *** *** *** *** *** ****   80702780
08D6 0 FF00             DR0TB DC    /FF00     DR0 LOOP RTN SAVE 0            80702790
08D7 0 0000                   DC    0         WRT RTN RETURN    1            80702800
08D8 0 0000                   DC    0         ERA RTN RETURN    2            80702810
08D9 0 0402                   DC    /0402     ERA MOD & FNC     3            80702820
08DA 0 0000                   DC    0         WR TM RTN RETURN  4            80702830
08DB 0 0401                   DC    /0401     WR TM FNC & MOD   5            80702840
08DC 0 0000                   DC    0         READ RTN RETURN   6            80702850
08DD 0 0000                   DC    0         READ RETRY SW     7            80702860
08DE 0 0000                   DC    0         BSP RTN RETURN    8            80702870
08DF 0 040B                   DC    /040B     BSP FNC & MOD     9            80702880
08E0 0 0000                   DC    0         RWD RTN RETURN    10           80702890
08E1 0 0404                   DC    /0404     RWD FNC & MOD     11           80702900
08E2 0 0000                   DC    0         SENSE RTN RETURN  12           80702910
08E3 0 0700                   DC    /0700     SENSE FNC & MOD   13           80702920
08E4 0 0000                   DC    0         STAC RTN RETURN   14           80702930
08E5 0 0000                   DC    0         SET MLSCF STORAGE 15           80702940
08E6 1 0BCF                   DC    SETX0     SET MLSCF ENTRY   16           80702950
08E7 0 0000                   DC    0         SET INT RETURN    17           80702960
08E8 1 0BE2                   DC    SETI0     SET INT ENTRY     18           80702970
08E9 0 0000                   DC    0         CKBSY RETURN      19           80702980
08EA 0 0000                   DC    0         CKAVL RETURN      20           80702990
08EB 0 0000                   DC    0         LOG/ERROR SW      21           80703000
08EC 1 0D52                   DC    MERX0     DR 0 MSG ADRS     22           80703010
08ED 0 0000                   DC    0         MER/MLG RETURN    23           80703020
08EE 0 0000                   DC    0         RTN 3/4 SW        24           80703030
08EF 0 0000                   DC    0         RTN 5/6 SW        25           80703040
08F0 0 0000                   DC    0         SET UP 1 RETURN   26           80703050
08F1 0 0720                   DC    /0720     RTN 9 MOD & FNC   27           80703060
08F2 0 0708                   DC    /0708     PROG STOP MOD&FNC 28           80703070
08F3 0 0000                   DC    0         EXPECTED TM DATA  29           80703080
08F4 0 0510                   DC    /0510     WRT-556,2,ODD     30           80703090
08F5 0 0610                   DC    /0610     RD-556,2,ODD      31           80703100
08F6 0 060D                   DC    /060D     RD-200,3, EVEN    32             03110
08F7 0 050D                   DC    /050D     WT-200,3, EVEN    33             03120
08F8 0 0606                   DC    /0606     READ FNC & MOD    34           80703130
08F9 0 0506                   DC    /0506     WRT FNC & MOD     35           80703140
08FA 0 0001                   DC    1         CONSTANT ONE      36           80703150
08FB 0 0000                   DC    0         DRIVE SELECTION   37           80703160
08FC 0 0000                   DC    0         RECORD CT SAVE    38           80703170
08FD 0 0606                   DC    /0606     READ FNC & MOD    39           80703180
08FE 0 0506                   DC    /0506     WRT FNC & MOD     40           80703190
08FF 0 0000                   DC    0         RTN 14/17 SW      41           80703200
0900 0 0000                   DC    0         SENSE WD STORAGE  42           80703210
0901 0 0000                   DC    0         REQ DEV RETURN    43           80703220
0902 0 0000                   DC    0         REL DEV RETURN    44           80703230
0903 1 0C18                   DC    LIV0      LOST INT VEC DR 0 45           80703240
0904 0 0000                   DC    0                             46SE       80703250
0905 1 6700 0974        SETX6 LDX   L3 MTTWO  IX3#ADRS CMN      47 48        80703260
0907 0 4D80 002E              BSC   I1 46       EXIT              49 50 SX     80703270
                        * *** *** *** *** *** *** *** *** *** *** *** ****   80703280
                        *                                                    80703290
                        *                DRIVE 1 TABLE OF CONSTANTS          80703300
                        *                AND RETURNS                         80703310
                        *                                                    80703320
                        * *** *** *** *** *** *** *** *** *** *** *** ****   80703330
0909 0 00FF             DR1TB DC    /00FF     DR 1 LOOP RTN SAVE             80703340
090A 0 0000                   DC    0         WRITE RTN RETURN  1            80703350
090B 0 0000                   DC    0         ERA RTN RETURN    2            80703360
090C 0 0422                   DC    /0422     ERA MOD & FNC     3            80703370
090D 0 0000                   DC    0         WR TM RTN RETURN  4            80703380
090E 0 0421                   DC    /0421     WR TM FNC & MOD   5            80703390
090F 0 0000                   DC    0         RD RTN RETURN     6            80703400
0910 0 0000                   DC    0         RD RETRY SW       7            80703410
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0911 0 0000                   DC    0         BSP RTN RETURN    8            80703420
0912 0 042B                   DC    /042B     BSP FNC & MOD     9            80703430
0913 0 0000                   DC    0         RWD RTN RETURN    10           80703440
0914 0 0424                   DC    /0424     RWD FNC & MOD     11           80703450
0915 0 0000                   DC    0         SENSE RTN RETURN  12           80703460
0916 0 0720                   DC    /0720     SENSE FNC & MOD   13           80703470
0917 0 0000                   DC    0         STAC RTN RETURN   14           80703480
0918 0 0000                   DC    0         SET MLSCF STORAGE 15           80703490
0919 1 0BD2                   DC    SETX1     SET MLSCF ENTRY   16           80703500
091A 0 0000                   DC    0         SET INT RETURN    17           80703510
091B 1 0BE5                   DC    SETI1     SET INT ENTRY     18           80703520
091C 0 0000                   DC    0         CKBSY RETURN      19           80703530
091D 0 0000                   DC    0         CK AVL RETURN     20           80703540
091E 0 0000                   DC    0         LOG/ERROR SW      21           80703550
091F 1 0D5C                   DC    MERX1     DR1 MSG ADRS      22           80703560
0920 0 0000                   DC    0         MER/MLG RETURN    23           80703570
0921 0 0000                   DC    0         RTN 3/4 SW        24           80703580
0922 0 0000                   DC    0         RTN 5/6 SW        25           80703590
0923 0 0000                   DC    0         SET UP 1 RETURN   26           80703600
0924 0 0700                   DC    /0700     RTN 9 MOD & FNC   27           80703610
0925 0 0728                   DC    /0728     PROG STOP MOD&FNC 28           80703620
0926 0 0000                   DC    0         EXPECTED TM DATA  29           80703630
0927 0 0530                   DC    /0530     WRT-556,2,ODD     30           80703640
0928 0 0630                   DC    /0630     RD-556,2,ODD      31           80703650
0929 0 062D                   DC    /062D     RD-200, 3, EVEN   32           80703660
092A 0 052D                   DC    /052D     WRT-200, 3, EVEN  33           80703670
092B 0 0626                   DC    /0626     READ MOD & FNC    34           80703680
092C 0 0526                   DC    /0526     WRT MOD & FNC     35           80703690
092D 0 0001                   DC    1         CONSTANT ONE      36           80703700
092E 0 0020                   DC    /0020     DRIVE SELECTION   37           80703710
092F 0 0000                   DC    0         RECORD CT SAVE    38           80703720
0930 0 0626                   DC    /0626     RD MOD & FNC      39           80703730
0931 0 0526                   DC    /0526     WRT MOD & FNC     40           80703740
0932 0 0000                   DC    0         RTN 14/17 SW      41           80703750
0933 0 0000                   DC    0         SENSE WD STORAGE  42           80703760
0934 0 0000                   DC    0         REQ DEV RETURN    43           80703770
0935 0 0000                   DC    0         REL DEV RETURN    44           80703780
0936 1 0C1A                   DC    LIV1      LOST INT VEC DR 1 45           80703790
0937 0 0000                   DC    0                             46SE       80703800
0938 0 70CC                   MDX   SETX6                         47         80703810
                        * *** *** *** *** *** *** *** *** *** *** *** ****   80703820
                        *                                                    80703830
                        *                DEVICE STATUS TABLES                80703840
                        *                DRIVE 0                             80703850
                        *                                                    80703860
                        * *** *** *** *** *** *** *** *** *** *** *** ****   80703870
0939 0 0000             DST0  DC    0         NUMBER TRACKS     0            80703880
093A 0 0000                   DC    0         AREA CODE         1            80703890
093B 0 0000                   DC    0         FUNCTION          2            80703900
093C 0 0000                   DC    0         MODIFIER          3            80703910
093D 0 0000                   DC    0         READ TM           4            80703920
093E 0 0000                   DC    0         WD CT RECEIVED    5            80703930
093F 0 0000                   DC    0         EXPECTED WD CT    6            80703940
0940 0 0000                   DC    0         WRITE TM          7            80703950
0941 0 0000                   DC    0         LAST DSW          8            80703960
0942 0 0000                   DC    0         PASS CT           9            80703970
0943 0 0000                   DC    0         RECORD CT         10           80703980
0944 0 0000                   DC    0         WD CT FOR CK      11           80703990
0945 0 0000                   DC    0         TOTAL WRITES      12           80704000
0946 0 0000                   DC    0         TOTAL READS       13           80704010
0947 0 0000                   DC    0         TOTAL REWINDS     14           80704020
0948 0 0000                   DC    0         WD CT DESIRED     15           80704030
0949 0 0000                   DC    0         RECOV RD CT       16           80704040
094A 0 0000                   DC    0         RECOV WT CT       17           80704050
094B 0 0000                   DC    0         UNRECOV RD CT     18           80704060
094C 0 0000                   DC    0         UNRECOV WT CT     19           80704070
094D 0 0000                   DC    0         TAPE ERASE CT     20           80704080
094E 0 0000                   DC    0         ERROR CONTROL     21           80704090
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094F 0 0000            DC      0          WORD PATTERN     22      80704100
0950 0 0000            DC      0          ACTUAL WORD      23      80704110
0951 0 0000            DC      0          PROG CT          24      80704120
0952 0 0000            DC      0          SPECIAL DSW      25      80704130
0953 0 0000            DC      0          DRIVE BUSY SW    26      80704140
0954 0 0000            DC      0          DRIVE AVAIL SW   27      80704150
0955 0 0000     RTN    DC      0          RTN NUMBER       28      80704160
                * *** *** *** *** *** *** *** *** *** *** ****     80704170
                *                                                 80704180
                *                DEVICE STATUS TABLE              80704190
                *                DRIVE 1                          80704200
                *                                                 80704210
                * *** *** *** *** *** *** *** *** *** *** ****     80704220
0956 0 0000     DST1   DC      0          NUMBER TRACKS    0       80704230
0957 0 0000            DC      0          AREA CODE        1       80704240
0958 0 0000            DC      0          FUNCTION         2       80704250
0959 0 0000            DC      0          MODIFIER         3       80704260
095A 0 0000            DC      0          READ TM          4       80704270
095B 0 0000            DC      0          WD CT RECEIVED   5       80704280
095C 0 0000            DC      0          WD CT EXPECTED   6       80704290
095D 0 0000            DC      0          WRITE TM         7       80704300
095E 0 0000            DC      0          LAST DSW         8       80704310
095F 0 0000            DC      0          PASS CT          9       80704320
0960 0 0000            DC      0          RECORD CT        10      80704330
0961 0 0000            DC      0          WD CT FOR CK     11      80704340
0962 0 0000            DC      0          TOTAL WRITES     12      80704350
0963 0 0000            DC      0          TOTAL READS      13      80704360
0964 0 0000            DC      0          TOTAL REWINDS    14      80704370
0965 0 0000            DC      0          WD CT DESIRED    15      80704380
0966 0 0000            DC      0          RECOV RD CT      16      80704390
0967 0 0000            DC      0          RECOV WT CT      17      80704400
0968 0 0000            DC      0          UNRECOV RD CT    18      80704410
0969 0 0000            DC      0          UNRECOV WT CT    19      80704420
096A 0 0000            DC      0          TAPE ERASE CT    20      80704430
096B 0 0000            DC      0          ERROR CONTROL    21      80704440
096C 0 0000            DC      0          WORD PATTERN     22      80704450
096D 0 0000            DC      0          ACTUAL WORD      23      80704460
096E 0 0000            DC      0          PROG CT          24      80704470
096F 0 0000            DC      0          SPECIAL DSW      25      80704480
0970 0 0000            DC      0          DRIVE BUSY SW    26      80704490
0971 0 0000            DC      0          DRIVE AVAIL SW   27      80704500
0972 0 0000     RTN1   DC      0          RTN NUMBER       28      80704510
                * *** *** *** *** *** *** *** *** *** *** ***     80704520
                *                                                 80704530
                *                TABLE OF COMMON VALUES           80704540
                *                                                 80704550
                * *** *** *** *** *** *** *** *** *** *** ***     80704560
0974    0000           BSS   E  0                                 80704570
0974 0 0002     MTTWO  DC      2          CONSTANT 2       0       80704580
0975 0 0003            DC      3          CONSTANT 3       1       80704590
0976 1 09DB     IOCC1  DC      IOA&10     RTN 7 IOCC       2       80704600
0977 0 0000            DC      0                           3       80704610
0978 1 09D1     IOCC2  DC      IOA        COMMON IOCC      4       80704620
0979 0 0000            DC      0                           5       80704630
097A 0 0000     IOCC3  DC      0          COMMON IOCC      6       80704640
097B 0 0000            DC      0                           7       80704650
097C 0 0000     MLG    DC      0                           8   SE  80704660
097D 1 4C00 0CAB       BSC  L  MLGE       GO TO MLG RTN    9  10   80704670
097F 0 0000     MER    DC      0                           11  SE  80704680
0980 1 4C00 0CB1       BSC  L  MERIE      GO TO MER RTN    12 13   80704690
0982 0 0000     BSP    DC      0                           14  SE  80704700
0983 1 4C00 0B6C       BSC  L  BSPE       GO TO BSP RTN    15 16   80704710
0985 0 0000     RWD    DC      0                           17  SE  80704720
0986 1 4C00 0B79       BSC  L  RWDE       GO TO RWD RTN    18 19   80704730
0988 0 0000     RDT    DC      0                           20  SE  80704740
0989 1 4C00 0AC8       BSC  L  RDTE       GO TO READ RTN   21 22   80704750
098B 0 0000     WRTM   DC      0                           23  SE  80704760
098C 1 4C00 0A6B       BSC  L  WRTME      GO TO WRT RTN    24 25   80704770
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098E 0 0000     WTM    DC      0                           26  SE  80704780
098F 1 4C00 0ABE       BSC  L  WTME       GO TO WT TM RT 27  28   80704790
0991 0 0000     ERA    DC      0                           29  SE  80704800
0992 1 4C00 0AB3       BSC  L  ERAE       GO TO ERASE RT 30  31   80704810
0994 0 0000     DSW    DC      0                           32  SE  80704820
0995 1 4C00 0BA7       BSC  L  DSWEN      GO SENSE DRIVE 33  34   80704830
0997 0 0000     STPST  DC      0                           35  SE  80704840
0998 1 4C00 0B8D       BSC  L  STPSE      GO SET MLSCF   36  37   80704850
099A 0 0000     CKBSY  DC      0                           38  SE  80704860
099B 1 4C00 0BE7       BSC  L  CKBSE      GO CK BUSY     39  40   80704870
099D 0 0000     CKAVL  DC      0                           41  SE  80704880
099E 1 4C00 0C2C       BSC  L  CKAVE      GO CK AVAIL    42  43   80704890
09A0 0 0000     MRCD   DC      0                           44  SE  80704900
09A1 1 4C00 0C43       BSC  L  MRCDE      GO CK DATA     45  46   80704910
09A3 0 0000     MRSC   DC      0                           47  SE  80704920
09A4 1 4C00 0D6F       BSC  L  MRSCE      GO SET I/O ARA 48  49   80704930
09A6 0 0000     COM00  DC      0                           50  SE  80704940
09A7 1 4C00 0E8F       BSC  L  COM0E      GO SET UP RTN1 51  52   80704950
09A9 0 0000     COM01  DC      0                           53  SE  80704960
09AA 1 4C00 0E97       BSC  L  COM1E      GO SET UP RTN2 54  55   80704970
09AC 0 0000     STARE  DC      0                           56  SE  80704980
09AD 0 4C80 012D       BSC  I  START      GO TO DIAG MON 57  58   80704990
09AF 0 4323     EXITE  BSI     3  35      GO SET MLSCF ENTRY     SRC 80705000
09B0 1 0A5B            DC      MRTN                               80705010
09B1 1 4C00 0D68       BSC  L  MERL1      GO TO CLEAR            80705020
09B3 0 0007            DC      7          CONSTANT 7       63    80705030
09B4 0 000A            DC      10         CONSTANT 10      64    80705040
09B5 0 0009            DC      9          CONSTANT 9       65    80705050
09B6 0 0008     RDTY4  DC      8          CONSTANT 8       66    80705060
09B7 1 09D1            DC      IOA        ADRS OF I/O AREA 67    80705070
09B8 0 0014            DC      20         CONSTANT 20      68    80705080
09B9 0 4014            DC      /4014      WC # 20, NO EOT  69    80705090
09BA 0 0004            DC      4          CONSTANT 4       70    80705100
09BB 0 4000            DC      /4000      NO END TBL INT   71    80705110
09BC 0 0005     RDTY6  DC      5          CONSTANT 5       72    80705120
09BD 0 0000     COM03  DC      0                           73  SE  80705130
09BE 1 4C00 0B98       BSC  L  COM3E      GO TO SET UP 3 74  75   80705140
09C0 0 0000     EXIT   DC      0                           76  SE  80705150
09C1 1 4C00 09AF       BSC  L  EXITE      GO TO WT TM RT 77  78   80705160
09C3 0 0100     SPFNC  DC      /0100      CONSTANT 0100    79    80705170
09C4 0 0200            DC      /0200      CONSTANT 0200    80    80705180
09C5 0 0000     MTRLD  DC      0                           81  SE  80705190
09C6 1 4C00 0DA4       BSC  L  MTRLE      GO RELEASE     82  83   80705200
09C8 0 0000     MTRED  DC      0                           84  SE  80705210
09C9 1 4C00 0D8D       BSC  L  MTREE      GO REQUEST     85  86   80705220
09CB 0 0000     STIR   DC      0                           87  SE  80705230
09CC 1 4C00 0BD4       BSC  L  STIRE      GO TO SET INT  88  89   80705240
09CE 0 0000     STAC   DC      0                           90  SE  80705250
09CF 1 4C00 0D7E       BSC  L  STACE      GO SET DR SEL  91  92   80705260
                * *** *** *** *** *** *** *** *** *** *** ***     80705270
                *                                                 80705280
                *              I/O AREA-USED BY BOTH DRS          80705290
                *                                                 80705300
                * *** *** *** *** *** *** *** *** *** *** ***     80705310
09D1 0 0000     IOA    DC      0          I/O AREA         93    80705320
09D2 0 0000            DC      0          I/O AREA &1      94    80705330
09D3 0 0000            DC      0          I/O AREA &2      95    80705340
09D4 0 0000            DC      0          I/O AREA &3      96    80705350
09D5 0 0000            DC      0          I/O AREA &4      97    80705360
09D6 0 0000            DC      0          I/O AREA &5      98    80705370
09D7 0 0000            DC      0          I/O AREA &6      99    80705380
09D8 0 0000            DC      0          I/O AREA &7      100   80705390
09D9 0 0000            DC      0          I/O AREA &8      101   80705400
09DA 0 0000            DC      0          I/O AREA &9      102   80705410
09DB 0 0000            DC      0          I/O AREA &10     103   80705420
09DC 0 0000            DC      0          I/O AREA &11     104   80705430
09DD 0 0000            DC      0          I/O AREA &12     105   80705440
09DE 0 0000            DC      0          I/O AREA &13     106   80705450
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09DF 0 0000              DC      0          I/O AREA &14     107       80705460
09E0 0 0000              DC      0          I/O AREA &15     108       80705470
09E1 0 0000              DC      0          I/O AREA &16     109       80705480
09E2 0 0000              DC      0          I/O AREA &17     110       80705490
09E3 0 0000              DC      0          I/O AREA &18     111       80705500
09E4 0 0000              DC      0          I/O AREA &19     112       80705510
09E5 0 0000              DC      0          I/O AREA &20     113       80705520
09E6 0 0000       INTIG  DC      0                           114 SE    80705530
09E7 1 4C00 0DB1         BSC  L  INTIE      SET INT IGNRE    115 116   80705540
09E9 0 0000              DC      0                           117 SE    80705550
09EA 0 4326              BSI  3  38         CK FOR BSY       118       80705560
09EB 0 4338              BSI  3  56         TO DIAG MON      119       80705570
                  * *** *** *** *** *** *** *** *** *** *** ***        80705580
                  * *** *** *** *** *** *** *** *** *** *** ***        80705590
                  *                                                    80705600
                  *                CHECK FOR SELECTED DRIVES           80705610
                  *                BEING READY                         80705620
                  *                                                    80705630
                  * *** *** *** *** *** *** *** *** *** *** ***        80705640
09EC 1 4400 0C1C  MON03  BSI  L  SETX4      SET IXING TO DR 0    SRC  80705650
09EE 0 4354              BSI  3  84         GO REQ DEVICE        SRC  80705660
09EF 1 C400 0819         LD   L  MTIO       GET AREA CODE             80705670
09F1 0 D201              STO  2  1          SET IN DST                80705680
09F2 1 C400 0804         LD   L  SW2        GET SW FNC 2              80705690
09F4 0 4828              BSC      &Z        IS DR 0 SELECTED          80705700
                  *                          TO BE RUN                 80705710
09F5 0 7007              MDX      MON04     NO-CK DR 1                80705720
09F6 1 7401 087E         MDX  L   SELSW,1   ADD 1 TO SEL SW           80705730
09F8 0 4320              BSI  3  32         GO SENSE DEVICE      SRC  80705740
09F9 0 4804              BSC      E         IS DRIVE READY            80705750
09FA 0 7021              MDX      MON01     NO-GO PRINT               80705760
09FB 0 4323              BSI  3  35         GO SET MLSCF ENTRY   SRC  80705770
09FC 1 0A25              DC       MON12                               80705780
                  *                                                    80705790
                  *                CHECK DRIVE ONE                     80705800
                  *                                                    80705810
09FD 1 4400 0C24  MON04  BSI  L  SETX5      SET IXING TO DR 1    SRC  80705820
09FF 1 C400 0819         LD   L  MTIO       GET AREA CODE             80705830
0A01 0 D201              STO  2  1          SET IN DST                80705840
0A02 0 4351              BSI  3  81         GO RELEASE DEVICE    SRC  80705850
0A03 0 1010              SLA      16        ZERO ACCUM                80705860
0A04 1 D400 08CC         STO  L   ACMT      CLEAR DR SEL              80705870
0A06 0 C200              LD   2   0         GET NO TRACKS             80705880
0A07 1 4C28 0A15         BSC  L   MON05,&Z  BRANCH # NO DR 1          80705890
0A09 1 C400 0804         LD   L   SW2       GET SW FNC 2              80705900
0A0B 0 1001              SLA      1                                   80705910
0A0C 0 4828              BSC      &Z        IS DR 1 SELECTED          80705920
                  *                          TO BE RUN                 80705930
0A0D 0 7007              MDX      MON05     NO-EXIT                   80705940
0A0E 1 7401 087E         MDX  L   SELSW,1   ADD 1 TO SEL SW           80705950
0A10 0 4320              BSI  3  32         GO SENSE DEVICE      SRC  80705960
0A11 0 4804              BSC      E         IS DRIVE READY            80705970
0A12 0 700E              MDX      MON02     NO-GO PRINT               80705980
0A13 0 4323              BSI  3  35         GO SET MLSCF ENTRY   SRC  80705990
0A14 1 0A25              DC       MON12                               80706000
0A15 1 7400 087E  MON05  MDX  L   SELSW,0   IS A DRIVE SELECTED       80706010
                  ********************************************       80706020
0A17 0 4338       MONAC  BSI  3  56         GO TO DIAG MON-START*     80706030
                  ********************************************       80706040
0A18 0 4308              BSI  3  8          GO TO PRINT VIA MLG  SRC  80706050
0A19 0 C002              DC       /C002     ID 2                      80706060
0A1A 0 0000              DC       /0000     LINE 0 - FORM 0           80706070
0A1B 0 7003              MDX      MONAA                               80706080
                  *                                                    80706090
                  *                DR 0 SELECTED BUT NOT RDY           80706100
                  *                                                    80706110
0A1C 0 4308       MON01  BSI  3  8          GO TO PRINT VIA MLG  SRC  80706120
0A1D 0 C000              DC       /C000     ID 0                      80706130
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0A1E 0 0000              DC       /0000     LINE 0 - FORM 0           80706140
                  ********************************************       80706150
0A1F 0 4C80 012E  MONAA  BSC  I   END        GO END PROGRAM       *    80706160
                  ********************************************       80706170
                  *                                                    80706180
                  *                DR 1 SELECTED BUT NOT RDY           80706190
                  *                                                    80706200
0A21 0 4308       MON02  BSI  3  8          GO TO PRINT VIA MLG  SRC  80706210
0A22 0 C001              DC       /C001     ID 1                      80706220
0A23 0 0000              DC       /0000     LINE 0 - FORM 0           80706230
0A24 0 70FA              MDX      MONAA                               80706240
                  *                                                    80706250
                  *                CHECK SWITCH SETTINGS               80706260
                  *                                                    80706270
                  *                                                    80706280
0A25 1 C400 0802  MON12  LD   L   SW0        GET SW FNC 0              80706290
0A27 1 4C04 0A1F         BSC  L   MONAA,E    BRANCH # TERMINATE        80706300
0A29 0 7013              MDX      MON10                               80706310
                  *                                                    80706320
                  *                SET TO NEXT RTN                     80706330
                  *                                                    80706340
0A2A 0 C21C       MON17  LD   2   28         GET RTN NUMBER            80706350
0A2B 0 8124       MON16  A    1   36         ADD ONE                   80706360
0A2C 0 D21C              STO  2   28         SAVE                      80706370
                  *                                                    80706380
                  *                BRANCH TO SELECTED RTN              80706390
                  *                                                    80706400
0A2D 0 4320       MON09  BSI  3  32          GO SENSE DEVICE      SRC  80706410
0A2E 0 1802              SRA      2                                   80706420
0A2F 0 4804              BSC      E         IS DR AT EOT              80706430
0A30 0 4311              BSI  3   17         YES-GO REWIND        SRC  80706440
0A31 0 4329              BSI  3   41         GO CK DR FOR AVAIL   SRC  80706450
0A32 0 6314              LDX  3   20                                   80706460
0A33 0 2F40       MON20  DC       /2F40     CLEAR STORAGE PRTCT       80706470
0A34 1 09D1              DC       IOA                                 80706480
0A35 0 73FF              MDX  3   -1         DECR IX 3                 80706490
0A36 0 70FC              MDX      MON20     LOOP                      80706500
0A37 0 C21C              LD   2   28         GET RTN NUMBER            80706510
0A38 0 800E              A        TAG01      ADD TABLE ADDRESS         80706520
0A39 0 D002              STO      MON18+1   PLACE IN BRANCH ADDRESS   80706530
                  *                                                    80706540
                  *                                                    80706550
0A3A 0 412E              BSI  1   46         SET IX 3             SRC  80706560
0A3B 0 4C80 0000  MON18  BSC  I   *-*        GO TO RTN                 80706570
                  *                                                    80706580
                  *                LOOP ROUTINE SW IS ON               80706590
                  *                                                    80706600
0A3D 1 C400 0803  MON10  LD   L   SW1        GET SW FNC 01             80706610
0A3F 0 E100              AND  1   0          SAVE SELECTION            80706620
0A40 1 4C18 0A2A         BSC  L   MON17,&-   BRANCH IF ZERO            80706630
0A42 0 D21C       MON19  STO  2   28         SET AS RTN NO             80706640
0A43 0 1808              SRA      8         MOVE DR 0 SELECTION       80706650
0A44 1 4C18 0A2D         BSC  L   MON09,&-   RETURN IF ZERO            80706660
0A46 0 70FB              MDX      MON19     LOOP ON NOT 0             80706670
                  *                                                    80706680
                  *                TABLE OF ROUTINE ADDRESSES          80706690
0A47 1 0A48       TAG01  DC       *          TABLE ADDRESS             80706700
0A48 0 0012       MONXB  DC       /0012      TOTAL ROUTINES            80706710
0A49 1 0DBB       MONXA  DC       F01AA      ROUTINE NUMBER 1          80706720
0A4A 1 0DBD              DC       F02AA                 2             80706730
0A4B 1 0DD1              DC       F03AA                 3             80706740
0A4C 1 0DD3              DC       F04AA                 4             80706750
0A4D 1 0E27              DC       F05AA                 5             80706760
0A4E 1 0E29              DC       F06AA                 6             80706770
0A4F 1 0E5D              DC       F07AA                 7             80706780
0A50 1 0EA3              DC       F08AA                 8             80706790
0A51 1 0EBF              DC       F09AA                 9             80706800
0A52 1 0ECE              DC       F0AAA                 10            80706810
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0A53 1 0ED8              DC      F0BAA                   11      80706820
0A54 1 0EE1              DC      F0CAA                   12      80706830
0A55 1 0F24              DC      F0DAA                   13      80706840
0A56 1 0F58              DC      F0EAA                   14      80706850
0A57 1 0F92              DC      F0FAA                   15      80706860
0A58 1 0FA9              DC      F10AA                   16      80706870
0A59 1 0F56              DC      F11AA                   17      80706880
0A5A 1 0A5B              DC      MRTN        PROG COMPLETE       80706890
                    * *** *** *** *** *** *** *** *** *** *** ***  80706900
                    *                                            80706910
                    *                ROUTINES RETURN HERE        80706920
                    *                                            80706930
                    * *** *** *** *** *** *** *** *** *** *** ***  80706940
0A5B 0 C21C         MRTN LD      2 28       GET RTN NUMBER       80706950
0A5C 0 F0EB              EOR     MONXB                           80706960
0A5D 1 4C20 0A25         BSC  L  MON12,Z    BRANCH # PROG NOT    80706970
                    *                       COMPLETE             80706980
0A5F 0 C218              LD      2 24       GET PROG CT          80706990
0A60 0 8124              A       1 36       ADD ONE              80707000
0A61 0 D218              STO     2 24       SAVE                 80707010
                    *                                            80707020
0A62 0 4308              BSI     3 8        GO TO PRINT VIA MLG  SRC 80707030
0A63 0 D001              DC      /D001      ID 01                80707040
0A64 0 0005              DC      /0005      LINE 0 - FORM 5      80707050
0A65 0 4308              BSI     3 8        GO TO PRINT VIA MLG  SRC 80707060
0A66 0 D001              DC      /D001      ID 01                80707070
0A67 0 8008              DC      /8008      LINE 2 FORM 8        80707080
0A68 0 1010              SLA     16         ZERO ACCUM           80707090
0A69 0 D21C              STO     2 28       SET RTN NUMBER # 0   80707100
0A6A 0 70BA              MDX     MON12      CONTINUE             80707110
                    * *** *** *** *** *** *** *** *** *** *** ***  80707120
                    *                                            80707130
                    *              THIS IS THE WRITE ROUTINE     80707140
                    *                                            80707150
                    * *** *** *** *** *** *** *** *** *** *** ***  80707160
0A6B 0 C317         WRTME LD     3 23       GET RETURN           SE  80707170
0A6C 0 D101               STO    1 1        SAVE RETURN              80707180
0A6D 0 4326               BSI    3 38       GO CK DR FOR BUSY    SRC 80707190
0A6E 0 1010               SLA    16                                  80707200
0A6F 0 D215               STO    2 21       CLEAR ERROR CONTROL      80707210
0A70 0 4326         WRTB  BSI    3 38       GO CK DR FOR BUSY    SRC 80707220
0A71 0 C123               LD     1 35       GET WRT FNC & MOD        80707230
0A72 0 4349               BSI    3 73       GO SET UP&ISSUE CMD  SRC 80707240
                    *                                            80707250
                    *              WRITE COMPLETE ROUTINE        80707260
                    *                                            80707270
0A73 0 C20C         WRTI  LD     2 12       GET TOTAL WRT CT     80707280
0A74 0 8124               A      1 36       ADD ONE              80707290
0A75 0 D20C               STO    2 12       SAVE                 80707300
0A76 0 C20A               LD     2 10       GET REC CT           80707310
0A77 0 8124               A      1 36       ADD ONE              80707320
0A78 0 D20A               STO    2 10       SAVE                 80707330
0A79 0 4351               BSI    3 81       GO RELEASE DEVICE    SRC 80707340
0A7A 0 C208         WRTIA LD     2 8        GET SENSE WD         80707350
0A7B 0 E034               AND    WRIX4      CK FOR ERROR         80707360
0A7C 0 4820               BSC    Z          SKIP # OK            80707370
0A7D 0 701B               MDX    WRTIE      BAD DSW              80707380
0A7E 1 C400 0802          LD     L  SW0     GET SW FNC 0         80707390
0A80 0 1008               SLA    8                               80707400
0A81 1 4C10 0A94          BSC    L  WRT01,- BRANCH # EOT SW OFF  80707410
                    *                                            80707420
0A83 0 C208         WRT02 LD     2 8        GET SENSE WD         80707430
0A84 0 E346               AND    3 70       CK FOR EOT           80707440
0A85 0 4820               BSC    Z          SKIP # NOT EOT       80707450
0A86 0 431A         WRT03 BSI    3 26       GO WRT TM            SRC 80707460
0A87 0 D207         WRIAI STO    2 7        LD TM SW             80707470
0A88 0 C215               LD     2 21       GET ERROR CTL        80707480
0A89 0 4820               BSC    Z          ANY PREVIOUS ERROR   80707490
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0A8A 0 7002              MDX     WRTID      YES                  80707500
0A8B 0 4D80 0001    WRTIC BSC    I1 1       EXIT                 SX  80707510
                    *                                            80707520
                    *              HAD A PREVIOUS ERROR          80707530
                    *                                            80707540
0A8D 0 C211         WRTID LD     2 17       GET REC WRT CT       80707550
0A8E 0 8124               A      1 36       ADD ONE              80707560
0A8F 0 D211               STO    2 17       SAVE                 80707570
                    *                                            80707580
0A90 0 4308               BSI    3 8        GO TO PRINT VIA MLG  SRC 80707590
0A91 0 A001               DC     /A001      ID 01                80707600
0A92 0 0003               DC     /0003      LINE 0 - FORM 3      80707610
0A93 0 70F7               MDX    WRTIC                           80707620
                    *                                            80707630
                    *              WRITE TO EOT SW IS OFF        80707640
                    *                                            80707650
                    *                                            80707660
                    *                                            80707670
                    *                                            80707680
0A94 0 C20A         WRT01 LD     2 10       GET RECORD NO        80707690
0A95 0 901C               S      WRIX7      SUB 501              80707700
0A96 1 4C18 0A86          BSC    L  WRT03,&- BRANCH # AT REC 500 80707710
0A98 0 70EA               MDX    WRT02      NOT REC 500          80707720
                    *                                            80707730
                    *                                            80707740
                    *              DSW NOT CORRECT               80707750
                    *                                            80707760
0A99 0 C208         WRTIE LD     2 8        GET SENSE WD         80707770
0A9A 0 E016               AND    WRIX6      CK FOR CORR          80707780
0A9B 0 4820               BSC    Z          SKIP # CORR          80707790
0A9C 0 700C               MDX    WRTII                           80707800
                    *                                            80707810
0A9D 0 4308               BSI    3 8        GO TO PRINT VIA MLG  SRC 80707820
0A9E 0 A002               DC     /A002      ID 02                80707830
0A9F 0 0002               DC     /0002      LINE 0 - FORM 2      80707840
                    *                                            80707850
                    *              CK NUMBER RETRYS              80707860
                    *                                            80707870
0AA0 0 C215         WRTIH LD     2 21       GET ERROR CTRL       80707880
0AA1 0 9300               S      3 0        SUB 2                80707890
0AA2 1 4C18 0AA9          BSC    L  WRTII,&- BRANCH # 3 RETRYS   80707900
0AA4 0 8301               A      3 1        ADD 3                80707910
0AA5 0 D215               STO    2 21       SAVE                 80707920
0AA6 0 430E               BSI    3 14       GO BACKSPACE         SRC 80707930
0AA7 0 431D               BSI    3 29       GO ERASE             SRC 80707940
0AA8 0 70C7               MDX    WRTB       GO WRT               80707950
                    *                                            80707960
                    *                                            80707970
                    *                                            80707980
                    *                                            80707990
                    *              UNREC ERROR                   80708000
                    *                                            80708010
0AA9 0 C213         WRTII LD     2 19       GET UNREC WT CT      80708020
0AAA 0 8124               A      1 36       ADD ONE              80708030
0AAB 0 D213               STO    2 19       SAVE                 80708040
                    *                                            80708050
0AAC 0 430B               BSI    3 11       GO TO PRINT VIA MER  SRC 80708060
0AAD 0 E003               DC     /E003      ID 03                80708070
0AAE 0 0002               DC     /0002      LINE 0 - FORM 2      80708080
0AAF 0 70DB               MDX    WRTIC      CONTINUE             80708090
                    *                                            80708100
                    *              CONSTANTS                     80708110
                    *                                            80708120
0AB0 0 2F83         WRIX4 DC     /2F83      DSW ERROR CK         80708130
0AB1 0 2C13         WRIX6 DC     /2C13      NONCORR ERROR CK     80708140
0AB2 0 01F5         WRIX7 DC     501        CONSTANT 501         80708150
                    * *** *** *** *** *** *** *** *** *** *** **** 80708160
                    *                                            80708170
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                        *                   THIS IS THE ERASE ROUTINE                80708180
                        *                                                            80708190
                        * *** *** *** *** *** *** *** *** *** *** ****               80708200
0AB3 0 C31D             ERAE  LD    3 29        GET RETURN              SE           80708210
0AB4 0 D102                   STO   1 2         SAVE                                 80708220
0AB5 0 4326                   BSI   3 38        GO CK DR FOR BUSY       SRC          80708230
0AB6 0 C103                   LD    1 3         GET MOD & FNC                        80708240
0AB7 0 4349                   BSI   3 73        GO SET UP&ISSUE CMD     SRC          80708250
                        *                                                            80708260
                        *                   ERASE COMPLETE RETURN                    80708270
                        *                                                            80708280
0AB8 0 C214             ERAB  LD    2 20        GET ERASE COUNT                      80708290
0AB9 0 8124                   A     1 36        ADD 1                                80708300
0ABA 0 D214                   STO   2 20        SAVE                                 80708310
0ABB 0 4351                   BSI   3 81        GO RELEASE DEVICE       SRC          80708320
0ABC 0 4D80 0002              BSC   I1 2        EXIT                    SX           80708330
                        * *** *** *** *** *** *** *** *** *** *** ****               80708340
                        *                                                            80708350
                        *                   THIS THE WRT TAPE MARK RTN               80708360
                        *                                                            80708370
                        * *** *** *** *** *** *** *** *** *** *** ****               80708380
0ABE 0 C31A             WTME  LD    3 26        GET RETURN              SE           80708390
0ABF 0 D104                   STO   1 4         SAVE RETURN                          80708400
0AC0 0 4326                   BSI   3 38        GO CK DR FOR BUSY       SRC          80708410
0AC1 0 C105                   LD    1 5         GET FNC & MOD                        80708420
0AC2 0 4349                   BSI   3 73        GO SET UP&ISSUE CMD     SRC          80708430
                        *                                                            80708440
                        *                   WRT TAPE MARK COMPLETE                   80708450
                        *                                                            80708460
0AC3 0 4351             WTMAB BSI   3 81        GO RELEASE DEVICE       SRC          80708470
0AC4 0 C124                   LD    1 36        GET ONE                              80708480
0AC5 0 D207                   STO   2 7         SET WRT TM SW                        80708490
0AC6 0 4D80 0004              BSC   I1 4        EXIT                    SX           80708500
                        * *** *** *** *** *** *** *** *** *** *** ***                80708510
                        *                                                            80708520
                        *                   THIS IS THE READ ROUTINE                 80708530
                        *                                                            80708540
                        * *** *** *** *** *** *** *** *** *** *** ***                80708550
0AC8 0 C314             RDTE  LD    3 20        GET RETURN              SE           80708560
0AC9 0 D106                   STO   1 6         SAVE RETURN                          80708570
0ACA 0 4326                   BSI   3 38        GO CK DR FOR BUSY       SRC          80708580
0ACB 0 1010                   SLA   16                                               80708590
0ACC 0 D215                   STO   2 21        CLEAR ERROR CONTROL                  80708600
0ACD 0 D107                   STO   1 7         CLEAR RETRY SW                       80708610
0ACE 0 4326             RDT1  BSI   3 38        GO CK DR FOR BUSY       SRC          80708620
0ACF 0 1010                   SLA   16          CLEAR ACCUM                          80708630
0AD0 0 D006                   STO   RDT8A       CLEAR ERROR SW                       80708640
0AD1 0 C122                   LD    1 34        GET READ MOD & FNC                   80708650
0AD2 0 4349                   BSI   3 73        GO SET UP&ISSUE CMD     SRC          80708660
                        *                                                            80708670
                        *                        CONSTANTS                           80708680
                        *                                                            80708690
0AD3 0 2FB3             RDTXA DC      /2FB3       DSW OK CK                          80708700
0AD4 0 3FCF             RDTXB DC      /3FCF       WLR OR DIAG CK                     80708710
0AD5 0 2C03             RDTXD DC      /2C03       NON CORRECTABLE CK                 80708720
0AD6 0 00FF             RDTY0 DC      /00FF       SAVE REREAD CT                     80708730
0AD7 0 0000             RDT8A DC      0           ERROR SW                           80708740
                        *                                                            80708750
                        *                   READ COMPLETE ROUTINE                    80708760
                        *                                                            80708770
0AD8 0 C20A             RDTI2 LD    2 10        GET REC CT                           80708780
0AD9 0 8124                   A     1 36        ADD ONE                              80708790
0ADA 0 D20A                   STO   2 10        SAVE                                 80708800
0ADB 0 4351                   BSI   3 81        GO RELEASE DEVICE       SRC          80708810
                        *                                                            80708820
                        *                   CHECK RETRY SW                           80708830
                        *                                                            80708840
0ADC 0 C107                   LD    1 7         GET RETRY SW                         80708850
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0ADD 1 4C20 0B57             BSC  L  RDT7A,Z     BRANCH # RETRY                  80708860
                        *                                                        80708870
0ADF 0 C20D                  LD    2 13          GET TOTAL RD CT                  80708880
0AE0 0 8124                  A     1 36          ADD ONE                          80708890
0AE1 0 D20D                  STO   2 13                                           80708900
                        *                                                        80708910
                        *                   CHECK FOR TAPE MARK                  80708920
                        *                                                        80708930
0AE2 0 C208                  LD    2 8           GET SENSE WD                     80708940
0AE3 0 1802                  SRA   2                                            80708950
0AE4 0 4804                  BSC   E             IS DR AT TM                      80708960
0AE5 0 702F                  MDX   RDT29         YES                              80708970
0AE6 0 1010             RDT35 SLA   16                                           80708980
0AE7 0 D204             RDT36 STO   2 4           SET IN TM SW                     80708990
                        *                                                        80709000
                        *                   CK IF SENSE WD IS GOOD               80709010
                        *                                                        80709020
0AE8 0 C208                  LD    2 8           GET SENSE WD                     80709030
0AE9 0 E0E9                  AND   RDTXA         CK FOR EXPECTED                  80709040
0AEA 0 4820                  BSC   Z             SKIP # OK                        80709050
0AEB 0 7030                  MDX   RDT03         DSW BAD                          80709060
                        *                                                        80709070
                        *                   CHECK RECORD CT                      80709080
                        *                                                        80709090
0AEC 0 4372             RDCKR BSI   3 114         GO SET INT IGNORE       SRC      80709100
0AED 1 C400 0802              LD    L SW0         GET SW FNC 0                     80709110
0AEF 0 1007                   SLA   7                                            80709120
0AF0 1 4C28 0B03              BSC   L CKDTA,&Z    BRANCH # CRC CK ON               80709130
0AF2 0 C20A                   LD    2 10          GET REC CT                       80709140
0AF3 0 9124                   S     1 36          SUB ONE                          80709150
0AF4 1 4C18 0B03              BZ    CKDTA         BRANCH IF EQUAL TO 1      $      80709160
0AF6 0 F35E                   EOR   3 94          COMPARE WITH REC RD              80709170
0AF7 1 4C18 0B03              BSC   L CKDTA,&-    BR = NO PREV ERR                 80709180
0AF9 0 4372                   BSI   3 114         SET INTRPT IGNORE       SRC      80709190
0AFA 0 4308                   BSI   3 8           PRINT VIA MLG           SRC      80709200
0AFB 0 A006                   DC    /A006         ID 06                            80709210
0AFC 0 0004                   DC    /0004         LINE 0 - FORM 4                  80709220
0AFD 0 4372                   BSI   3 114         SET INTRPT IGNORE       SRC      80709230
0AFE 0 C35E                   LD    3 94          GET REC NO READ                  80709240
0AFF 0 8124                   A     1 36          ADD ONE                          80709250
0B00 0 D20A                   STO   2 10          SET AS EXPECTED                  80709260
0B01 1 7401 0AD7              MDX   L RDT8A,1     INCR ERROR SW                    80709270
0B03 0 432C             CKDTA BSI   3 44          GO CK DATA              SRC      80709280
0B04 1 7400 0AD7              MDX   L RDT8A,0     IS ERROR SW # 0                  80709290
0B06 0 7027                   MDX   RDT37         NO-RETRY                         80709300
0B07 0 C215             RDT30 LD    2 21          GET ERROR CTRL                   80709310
0B08 1 4C18 0B10              BSC   L RDT19,+-    BRANCH = NO PREV ERR             80709320
0B0A 0 C210                   LD    2 16          GET RECOVERED RD CT              80709330
0B0B 0 8124                   A     1 36          ADD ONE                          80709340
0B0C 0 D210                   STO   2 16          SAVE                             80709350
0B0D 0 4308                   BSI   3 8           PRINT VIA MLG           SRC      80709360
0B0E 0 A003                   DC    /A003         ID 03                            80709370
0B0F 0 0003                   DC    /0003         LINE 0 - FORM 3                  80709380
0B10 0 C106             RDT19 LD    1 6           GET RETURN                       80709390
0B11 0 8124                   A     1 36          ADD ONE                          80709400
0B12 0 D106                   STO   1 6           SAVE                             80709410
0B13 0 4D80 0006              BSC   I1 6          EXIT                    SX       80709420
                        *                                                        80709430
                        *                   9 TRACK TM READ                      80709440
                        *                                                        80709450
0B15 0 C209             RDT29 LD    2 9           GET TAPE PASS CT                 80709460
0B16 0 8300                   A     3 0           ADD 2                            80709470
0B17 0 D209                   STO   2 9           SAVE                             80709480
0B18 0 C124                   LD    1 36          GET ONE                          80709490
0B19 0 D204                   STO   2 4           SET TM SW                        80709500
0B1A 0 70F5                   MDX   RDT19                                        80709510
0B1B 0 70F4                   MDX   RDT19                                        80709520
                        *                                                        80709530
```

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                                *
                                *                DSW WAS NOT CORRECT                    80709540
                                *                                                       80709550
0B1C 0 C208          RDT03 LD     2 8          GET SENSE WD                           80709560
0B1D 0 E0B7                AND      RDTXD       CK FOR CORRECTABLE                     80709570
0B1E 0 4820                BSC      Z           SKIP # CORRECTABLE                     80709580
0B1F 0 703C                MDX      RDT18       NOT CORRECTABLE                        80709590
0B20 0 4308                BSI    3 8           GO TO PRINT VIA MLG  SRC               80709600
0B21 0 A004                DC       /A004       ID 04                                  80709610
0B22 0 0002                DC       /0002       LINE 0 - FORM 2                        80709620
0B23 1 C400 0813           LD     L TERM&5      BYPASS CK IF ON LINE                   80709630
0B25 1 4C20 0806           BSC    L RDT30-1,Z                                        80709640
0B27 0 C208                LD     2 8           GET SENSE WD                           80709650
0B28 0 E0AB                AND      RDTXB       CK WLR OR DIAG                         80709660
0B29 1 4C18 0B2D           BSC    L RDT20,&-    SKIP # NO RETRY                        80709670
0B2B 1 7401 0AD7           MDX    L RDT8A,1     INCR ERROR SW                          80709680
0B2D 0 70BE          RDT20 MDX      RDCKR       GO CK HDR                              80709690
0B2E 0 C215          RDT37 LD     2 21          GET ERROR CONTROL                      80709700
0B2F 0 E0A6                AND      RDTY0       SAVE REREAD CT                         80709710
0B30 0 9341                S      3 65          SUB 9                                  80709720
0B31 0 4818                BSC      &-          IS READ CT # 9                         80709730
0B32 0 7005                MDX      RDT15       YES-GO PASS CLEANER                    80709740
                                *                                                       80709750
0B33 0 C215                LD     2 21          GET ERROR CONTROL                      80709760
0B34 0 8124                A      1 36          ADD 1                                  80709770
0B35 0 D215                STO    2 21          SAVE                                   80709780
0B36 0 430E                BSI    3 14          GO BACKSPACE          SRC              80709790
0B37 0 7096                MDX      RDT1        GO RETRY                               80709800
                                *                                                       80709810
                                *                REREAD CT WAS 9                        80709820
                                *                                                       80709830
0B38 0 C215          RDT15 LD     2 21          GET ERROR CTRL                         80709840
0B39 0 1808                SRA      8                                                  80709850
0B3A 0 9341                S      3 65          SUB 9                                  80709860
0B3B 1 4C18 0B5C           BSC    L RDT18,&-    BRANCH # CLEAN CT#10                   80709870
0B3D 0 8340                A      3 64          ADD TEN                                80709880
0B3E 0 1008                SLA      8                                                  80709890
0B3F 0 D215                STO    2 21          SAVE                                   80709900
                                *                                                       80709910
                                *                BACKSPACE PAST CLEANER                 80709920
                                *                                                       80709930
0B40 0 6305                      LDX    3 5                                           80709940
0B41 0 6B07          RDT16 STX    3 RDTXC&1     SAVE IX 3                              80709950
0B42 0 412E                BSI    1 46          SET IX 3              SRC              80709960
0B43 0 C20A                LD     2 10          GET REC CT                             80709970
0B44 0 9124                S      1 36          SUB ONE                                80709980
0B45 1 4C18 0B63           BSC    L RDT22,&-    IS TAPE AT 1ST REC                     80709990
0B47 0 430E                BSI    3 14          GO BACKSPACE          SRC              80710000
0B48 0 6700 0000     RDTXC LDX    L3 0          RESTORE IX 3                           80710010
0B4A 0 73FF                MDX    3 -1          DECR IX 3                              80710020
0B4B 0 70F5                MDX      RDT16       LOOP                                   80710030
                                *                                                       80710040
                                *                RECORD IS PAST CLEANER                 80710050
                                *                REPOSITION TO REC DESIRED              80710060
                                *                                                       80710070
0B4C 0 6305                      LDX    3 5                                           80710080
0B4D 0 6B0A          RDT17 STX    3 RDT7A&1     SAVE IX 3                              80710090
0B4E 0 C124                LD     1 36          GET ONE                                80710100
0B4F 0 D107                STO    1 7           SET RETRY SW                           80710110
0B50 0 73FF                MDX    3 -1          DECR IX 3                              80710120
0B51 0 7002                MDX      RDT04       GO SKIP 1 REC                          80710130
0B52 0 1010                SLA      16                                                 80710140
0B53 0 D107                STO    1 7           CLEAR RETRY SW                         80710150
0B54 0 412E          RDT04 BSI    1 46          SET IX 3              SRC              80710160
0B55 1 4C00 0ACE           BSC    L RDT1        GO RETRY                               80710170
0B57 0 6700 0000     RDT7A LDX    L3 0          RESTORE IX 3                           80710180
0B59 0 73FF                MDX    3 -1                                                 80710190
0B5A 0 70F2                MDX      RDT17                                              80710200
0B5B 0 70F1                MDX      RDT17                                              80710210
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                                *                                                       80710220
                                *                UNCORRECTABLE ERROR                    80710230
                                *                                                       80710240
0B5C 0 C212          RDT18 LD     2 18          GET UNRECOV RD CT                      80710250
0B5D 0 8124                A      1 36          ADD ONE                                80710260
0B5E 0 D212                STO    2 18          SAVE                                   80710270
0B5F 0 430B                BSI    3 11          GO TO PRINT VIA MER  SRC               80710280
0B60 0 E004                DC       /E004       ID 04                                  80710290
0B61 0 0002                DC       /0002       LINE 0 - FORM 2                        80710300
0B62 0 70AD                MDX      RDT19       CONTINUE                               80710310
                                *                                                       80710320
                                *                TAPE REACHED LOAD POINT-               80710330
                                *                DID NOT PASS CLEANER                   80710340
                                *                                                       80710350
0B63 0 4308          RDT22 BSI    3 8           GO TO PRINT VIA MLG  SRC               80710360
0B64 0 A005                DC       /A005       ID 05                                  80710370
0B65 0 0003                DC       /0003       LINE 0 - FORM 3                        80710380
                                *                                                       80710390
0B66 0 C348                LD     3 72          GET 0005                               80710400
0B67 0 90E1                S        RDTXC&1     SUB PRESENT LOC                        80710410
0B68 0 D0E0                STO      RDTXC&1     SAVE                                   80710420
0B69 1 6780 0B49           LDX    I3 RDTXC&1    IX 3 # RECS TO PASS                    80710430
0B6B 0 70E1                MDX      RDT17       GO RESTORE TAPE                        80710440
                                * *** *** *** *** *** *** *** *** *** *** ***          80710450
                                *                                                       80710460
                                *                THIS IS THE BACKSPACE RTN              80710470
                                *                                                       80710480
                                * *** *** *** *** *** *** *** *** *** *** ***          80710490
0B6C 0 C30E          BSPE  LD     3 14          GET RETURN                 SE          80710500
0B6D 0 D108                STO    1 8           SAVE RETURN                            80710510
0B6E 0 4326          BSP02 BSI    3 38          GO CK DR FOR BUSY          SRC         80710520
0B6F 0 C109          BSP06 LD     1 9           GET FNC & MOD                          80710530
0B70 0 4349                BSI    3 73          GO SET UP&ISSUE CMD        SRC         80710540
                                *                                                       80710550
                                *                BACKSPACE COMPLETED                    80710560
                                *                                                       80710570
0B71 0 C20A          BSPI2 LD     2 10          GET REC CT                             80710580
0B72 1 4C18 0B76           BZ       *+2         SKIP SUBT. IF ALRDY ZERO $             80710590
0B74 0 9124                S      1 36          SUB ONE                                80710600
0B75 0 D20A                STO    2 10          SAVE                                   80710610
0B76 0 4351                BSI    3 81          GO RELEASE DEVICE          SRC         80710620
0B77 0 4D80 0008     BSP05 BSC    I1 8          EXIT                       SX          80710630
                                * *** *** *** *** *** *** *** *** *** *** ****       80710640
                                *                                                       80710650
                                *                THIS IS THE REWIND ROUTINE             80710660
                                *                                                       80710670
                                * *** *** *** *** *** *** *** *** *** *** ****       80710680
0B79 0 C311          RWDE  LD     3 17          GET RETURN                 SE          80710690
0B7A 0 D10A                STO    1 10          SAVE RETURN                            80710700
                                *                                                       80710710
                                *                CK FOR LD PT                           80710720
                                *                                                       80710730
0B7B 0 4329          RWD04 BSI    3 41          GO CK FOR AVAIL            SRC         80710740
0B7C 0 4326                BSI    3 38          GO CK FOR BUSY             SRC         80710750
0B7D 0 4320                BSI    3 32          GO SENSE DEVICE            SRC         80710760
0B7E 0 100C                SLA      12                                                 80710770
0B7F 0 4828                BSC      &Z          IS DR AT LD PT                         80710780
0B80 0 7011                MDX      RWDI1       YES                                    80710790
                                *                                                       80710800
                                *                OK TO REWIND                           80710810
                                *                                                       80710820
0B81 0 C20E                LD     2 14          GET REWIND COUNT                       80710830
0B82 0 8124                A      1 36          ADD 1                                  80710840
0B83 0 D20E                STO    2 14          SAVE                                   80710850
0B84 0 C10B                LD     1 11          GET FNC & MOD                          80710860
0B85 0 D202                STO    2 2           SET FNC IN DST                         80710870
0B86 0 D203                STO    2 3           SET MOD IN DST                         80710880
0B87 0 F201                EOR    2 1           SET AREA CODE                          80710890
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0B88 0 D305          STO   3 5        SET IOCC                    80710900
0B89 0 7017          MDX     COM3F    GO ISSUE COMMAND            80710910
0B8A 0 4351    RWDIR BSI   3 81       GO RELEASE            SRC   80710920
0B8B 0 4320    RWDI2 BSI   3 32       GO SENSE DEVICE       SRC   80710930
0B8C 0 100C          SLA     12                                    80710940
0B8D 0 4828          BSC     &Z       IS DR AT LD PT              80710950
0B8E 0 7003          MDX     RWDI1    YES                         80710960
0B8F 0 4323          BSI   3 35       SET MLSCF ENTRY       SRC   80710970
0B90 1 0B8B          DC      RWDI2                                 80710980
                     ********************************************* 80710990
0B91 0 4338          BSI   3 56       GO TO DIAG MON-START*       80711000
                     ********************************************* 80711010
                     *                                             80711020
                     *              DRIVE AT REC 1 OR LOAD PT      80711030
                     *                                             80711040
0B92 0 4326    RWDI1 BSI   3 38       CK FOR BUSY           SRC   80711050
0B93 0 C124    RWD08 LD    1 36       GET ONE                     80711060
0B94 0 D20A          STO   2 10       SET REC CT # 1              80711070
0B95 0 4329          BSI   3 41       GO CK FOR AVAIL       SRC   80711080
0B96 0 4D80 000A     BSC   I1 10      EXIT                  SX    80711090
                     * *** *** *** *** *** *** *** *** *** *** **** 80711100
                     *                                             80711110
                     *              COMMON ROUTINE TO SET UP       80711120
                     *              IOCC, SET WD CT, SAVE THE      80711130
                     *              DRIVE SELECTION AND ISSUE      80711140
                     *              THE COMMAND                    80711150
                     *                                             80711160
                     * *** *** *** *** *** *** *** *** *** *** **** 80711170
0B98 0 D202    COM3E STO   2 2        SET FNC IN DST        SE    80711180
0B99 0 D203          STO   2 3        SET MOD IN DST              80711190
0B9A 0 F201          EOR   2 1        SET AREA CODE               80711200
0B9B 0 D305          STO   3 5        SET IOCC                    80711210
0B9C 0 C20F          LD    2 15       GET WD CT                   80711220
0B9D 0 F347          EOR   3 71       SET NO EOT INTRPT           80711230
0B9E 0 D35D          STO   3 93       SET IN I/O AREA             80711240
0B9F 0 C20A          LD    2 10       GET RECORD CT               80711250
0BA0 0 D35E          STO   3 94       SET IN I/O AREA & 1         80711280
0BA1 0 C124    COM3F LD    1 36       GET ONE                     80711290
0BA2 0 D21A          STO   2 26       SET IN DR BUSY SW           80711300
0BA3 0 4354          BSI   3 84       GO REQUEST DEVICE     SRC   80711310
0BA4 0 0B04          XIO   3 4        ISSUE COMMAND               80711320
0BA5 0 4326          BSI   3 38       CK FOR BUSY           SRC   80711330
                     ********************************************* 80711340
0BA6 0 4338          BSI   3 56       GO TO DIAG MON START*SX     80711350
                     ********************************************* 80711360
                     * *** *** *** *** *** *** *** *** *** *** **** 80711370
                     *                                             80711380
                     *              THIS IS THE SENSE DEVICE       80711390
                     *              ROUTINE                        80711400
                     *                                             80711410
                     * *** *** *** *** *** *** *** *** *** *** **** 80711420
0BA7 0 C320    DSWEN LD    3 32       GET RETURN            SE    80711430
0BA8 0 D10C          STO   1 12       SAVE RETURN                 80711440
                     *                                             80711450
                     *              BUILD IOCC                     80711460
                     *                                             80711470
0BA9 0 C10D    DSW8  LD    1 13       GET FNC & MOD               80711480
0BAA 0 F201          EOR   2 1        SET AREA CODE               80711490
0BAB 0 D307          STO   3 7        SET IOCC                    80711500
0BAC 0 6302    DSW13 LDX   3 2        SET FOR DOUBLE SENSE        80711510
0BAD 1 0C00 097A DSW0  XIO   L  IOCC3 ISSUE SENSE                 80711520
0BAF 1 D700 0BBA     STO   L3 DSWX0-1     SAVE SENSE WORDS       80711530
0BB1 0 73FF          MDX   3 -1       DECR IX 3                   80711540
0BB2 0 70FA          MDX     DSW0     LOOP                        80711550
0BB3 0 C008    DSW11 LD      DSWX0&1  GET FIRST SENSE WORD        80711560
0BB4 0 F006          EOR     DSWX0    COMPARE WITH SECOND         80711570
0BB5 0 4820          BSC     Z        IS DRIVE FULLY SELEC        80711580
0BB6 0 70F5          MDX     DSW13    NO SENSE AGAIN              80711590
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                     *                                             80711600
0BB7 0 412E          BSI   1 46       SET IX 3              SRC   80711610
0BB8 0 C002    DSWD  LD      DSWX0    GET SENSE WD                80711620
0BB9 0 4D80 000C     BSC   I1 12      EXIT                  SX    80711630
                     *                                             80711640
                     *                    CONSTANTS                80711650
                     *                                             80711660
0BBB 0 0000    DSWX0 DC      0        SECOND SENSE STORAGE        80711670
0BBC 0 0000          DC      0        FIRST SENSE STORAGE         80711680
                     * *** *** *** *** *** *** *** *** *** *** *** 80711690
                     *                                             80711700
                     *              ROUTINE TO SET MLSCF ENTRY     80711710
                     *                                             80711720
                     * *** *** *** *** *** *** *** *** *** *** *** 80711730
0BBD 0 C780 0023 STPSE LD    I3 35      GET ADRS TO SET       SE    80711740
0BBF 0 D10F          STO   1 15       SAVE                        80711750
0BC0 1 6700 080C     LDX   L3 MLSCF&3 IX 3 # ADRS ML MLSCF        80711760
0BC2 0 C300          LD    3 0        GET FIRST ENTRY             80711770
0BC3 0 4820          BSC     Z        IS IT ZERO                  80711780
0BC4 0 7002          MDX     STPS2    NO                          80711790
0BC5 0 C301          LD    3 1        GET SECOND ENTRY            80711800
0BC6 0 D300          STO   3 0        SET IN FIRST                80711810
0BC7 0 C110    STPS2 LD    1 16       GET NEW ENTRY               80711820
0BC8 0 D301          STO   3 1        SET IN SECOND ENTRY         80711830
0BC9 0 412E          BSI   1 46       SET IX 3              SRC   80711840
0BCA 0 C323          LD    3 35       GET RETURN                  80711850
0BCB 0 8124          A     1 36       ADD ONE                     80711860
0BCC 0 D001          STO     STPS6&1  SAVE                        80711870
0BCD 0 4C00 0000 STPS6 BSC   L  0      EXIT                  SX    80711880
                     *                                             80711890
                     *                    MONITOR RETURNS          80711900
                     *                                             80711910
0BCF 0 404C    SETX0 BSI     SETX4    SET IXING TO DR 0     SRC   80711920
0BD0 0 4D80 000F SETX3 BSC   I1 15      GO TO PROPER ADRS           80711930
                     *                                             80711940
0BD2 0 4051    SETX1 BSI     SETX5    SET IXING TO DR 1     SRC   80711950
0BD3 0 7CFC          MDX     SETX3                                 80711960
                     * *** *** *** *** *** *** *** *** *** *** **** 80711970
                     *                                             80711980
                     *              ROUTINE TO SET INTRUPT         80711990
                     *              MLSCF ENTRY                    80712000
                     *                                             80712010
                     * *** *** *** *** *** *** *** *** *** *** **** 80712020
0BD4 0 C780 0057 STIRE LD    I3 87      GET ADRS TO SET       SE    80712030
0BD6 0 D111          STO   1 17       SAVE RETURN                 80712040
0BD7 1 67C0 080A     LDX   L3 MLSCF&1 IX 3 # ADR INT MLSCF        80712050
0BD9 0 C300    STIR3 LD    3 0        GET AN ENTRY                80712060
0BDA 0 4820          BSC     Z        IS IT ZERO                  80712070
0BDB 0 7002          MDX     STIR0    NO                          80712080
0BDC 0 C301    STIR1 LD    3 1        GET NEXT ENTRY              80712090
0BDD 0 D300          STO   3 0        PUSH ENTRY UP               80712100
                     *                                             80712110
                     *              SET NEW ENTRY                  80712120
                     *                                             80712130
0BDE 0 C112    STIR0 LD    1 18       GET NEW ENTRY               80712140
0BDF 0 D301          STO   3 1        SET AT BOTTOM               80712150
0BE0 1 4C00 0856 STIR6 BSC   L  MTIR&1 EXIT                  SX    80712160
                     *                                             80712170
                     *              MONITOR RETURNS                80712180
                     *                                             80712190
0BE2 0 4039    SETI0 BSI     SETX4    SET IXING TO DR 0     SRC   80712200
0BE3 0 4D80 0011 SETI3 BSC   I1 17      GO TO PROPER ADRS           80712210
                     *                                             80712220
0BE5 0 403E    SETI1 BSI     SETX5    SET IXING TO DR 1     SRC   80712230
0BE6 0 70FC          MDX     SETI3                                 80712240
                     * *** *** *** *** *** *** *** *** *** *** **** 80712250
                     *                                             80712260
                     *              ROUTINE TO CHECK BUSY          80712270
```

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                        *                                                       80712280
                        * *** *** *** *** *** *** *** *** *** *** *** ****     80712290
0BE7 0 C326             CKBSE LD    3 38        GET RETURN            SE        80712300
0BE8 0 D113                   STO   1 19        SAVE                            80712310
0BE9 1 7400 0953        BSY03 MDX   L DST0&26,0 IS DR 0 BUSY                   80712320
0BEB 0 700D                   MDX     BSY01     YES                             80712330
0BEC 0 1010                   SLA     16        ZERO ACCUM                      80712340
0BED 0 D028                   STO     BSYX2     CLEAR BUSY COUNT                80712350
0BEE 1 7400 0970        BSY04 MDX   L DST1&26,0 IS DR 1 BUSY                   80712360
0BF0 0 7013                   MDX     BSY05     YES                             80712370
0BF1 0 1010                   SLA     16        ZERO ACCUM                      80712380
0BF2 0 D024                   STO     BSYX3     CLEAR BUSY COUNT                80712390
0BF3 0 4320                   BSI   3 32        SENSE DR TO SELECT    SRC       80712400
0BF4 0 1801                   SRA     1                                         80712410
0BF5 1 4C04 0C00              BSC   L BSY02,E     BRANCH # DR BUSY              80712420
0BF7 0 4D80 0013              BSC   I1 19        EXIT                  SX        80712430
                        *                                                       80712440
                        *                 DRIVE 0 IS BUSY                       80712450
                        *                                                       80712460
0BF9 1 740A 0C16        BSY01 MDX   L BSYX2,10   IS DR BUSY TOO LONG            80712470
0BFB 0 7004                   MDX     BSY02     NO                              80712480
                        *                                                       80712490
                        *                                                       80712500
0BFC 0 1010                   SLA     16                                        80712510
0BFD 0 D018                   STO     BSYX2     ZERO BUSY COUNT                 80712520
0BFE 0 401D                   BSI     SETX4     SET IXING DR 0        SRC       80712530
0BFF 0 700A                   MDX     BSY08     GO PRINT                        80712540
0C00 0 C12D             BSY02 LD    1 45        GET LOST INT VECT               80712550
0C01 1 D400 0809              STO   L MLSCF     SET                             80712560
                        ********************************************          80712570
0C03 0 4338             BSY07 BSI   3 56        GO TO DIAG MON-START*          80712580
                        ********************************************          80712590
                        *                                                       80712600
                        *                 DRIVE 1 IS BUSY                       80712610
                        *                                                       80712620
0C04 1 740A 0C17        BSY05 MDX   L BSYX3,10   IS DR BUSY TOO LONG            80712630
0C06 0 70F9                   MDX     BSY02     NO                              80712640
                        *                                                       80712650
                        *                                                       80712660
0C07 0 1010                   SLA     16                                        80712670
0C08 0 D00E                   STO     BSYX3     ZERO BUSY COUNT                 80712680
0C09 0 401A                   BSI     SETX5     SET IXING DR 1                  80712690
                        *                                                       80712700
0C0A 0 430B             BSY08 BSI   3 11        GO TO PRINT VIA MER   SRC       80712710
0C0B 0 E006                   DC      /E006     ID 06                           80712720
0C0C 0 0009                   DC      /0009     LINE 0  FORM 9                  80712730
0C0D 0 C10D                   LD    1 13        GET SENSE FNC                   80712740
0C0E 0 F201                   EOR   2 1         SET AREA CODE                   80712750
0C0F 0 D307                   STO   3 7         STORE                           80712760
0C10 0 0B06                   XIO   3 6         SENSE NON-RESETABLE             80712770
0C11 0 C307                   LD    3 7         GET IOCC                        80712780
0C12 0 F124                   EOR   1 36        SET BIT 15                      80712790
0C13 0 D307                   STO   3 7         SAVE                            80712800
0C14 0 0B06                   XIO   3 6         SENSE-RESETABLE                 80712810
0C15 0 434C                   BSI   3 76        GO TO RTN EXIT                  80712820
                        *                                                       80712830
                        *                 CONSTANTS                             80712840
                        *                                                       80712850
0C16 0 0000             BSYX2 DC      0         DR 0 BUSY CT                    80712860
0C17 0 0000             BSYX3 DC      0         DR 1 BUSY CT                    80712870
0C18 0 4003             LIV0  BSI     SETX4     SET IXING TO DR 0     SRC       80712880
0C19 0 70CF                   MDX     BSY03                                     80712890
0C1A 0 4009             LIV1  BSI     SETX5     SET IXING TO DR 1     SRC       80712900
0C1B 0 70CD                   MDX     BSY03                                     80712910
                        * *** *** *** *** *** *** *** *** *** *** *** ****     80712920
                        *                                                       80712930
                        *                 ROUTINE TO SET INDEXING               80712940
                        *                 TO DRIVE 0 VALUES                     80712950
```



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                        *                                                       80712960
                        * *** *** *** *** *** *** *** *** *** *** *** ****     80712970
0C1C 0 0000             SETX4 DC      0                             SE        80712980
0C1D 1 6500 08D6              LDX   L1 DR0TB                                  80712990
0C1F 1 6600 0939              LDX   L2 DST0                                   80713000
0C21 0 412E                   BSI     1 46        SET IX 3              SRC       80713010
0C22 1 4C80 0C1C              BSC   I  SETX4      EXIT                  SX        80713020
                        * *** *** *** *** *** *** *** *** *** *** *** ****     80713030
                        *                                                       80713040
                        *                 ROUTINE TO SET INDEXING               80713050
                        *                 TO DRIVE 1 VALUES                     80713060
                        *                                                       80713070
                        * *** *** *** *** *** *** *** *** *** *** *** ****     80713080
0C24 0 0000             SETX5 DC .    0                             SE        80713090
0C25 1 6500 0909              LDX   L1 DR1TB                                  80713100
0C27 1 6600 0956              LDX   L2 DST1                                   80713110
0C29 0 412E                   BSI     1 46        SET IX 3              SRC       80713120
0C2A 1 4C80 0C24              BSC   I  SETX5      EXIT                  SX        80713130
                        * *** *** *** *** *** *** *** *** *** *** *** ***      80713140
                        *                                                       80713150
                        *                 ROUTINE TO CK AVAILABLE               80713160
                        *                                                       80713170
                        * *** *** *** *** *** *** *** *** *** *** *** ***      80713180
0C2C 0 C329             CKAVE LD    3 41        GET RETURN            SE        80713190
0C2D 0 D114                   STO     1 20        SAVE                            80713200
0C2E 1 7400 0954        AVL02 MDX   L DST0&27,0 IS DR 0 AVAIL                   80713210
0C30 0 7007                   MDX     AVL01     NO                              80713220
0C31 1 7400 0971              MDX   L DST1&27,0 IS DR 1 AVAIL                   80713230
0C33 0 7004                   MDX     AVL01     NO                              80713240
0C34 0 1010                   SLA     16        ZERO ACCUM                      80713250
0C35 0 D00C                   STO     AVLX1     CLEAR NOT AVAIL CT              80713260
0C36 0 4D80 0014              BSC   I1 20        EXIT                  SX        80713270
                        *                                                       80713280
0C38 1 7401 0C42        AVL01 MDX   L AVLX1,1    DR NOT AVAIL TOO LNG            80713290
0C3A 0 7004                   MDX     AVL03     NO                              80713300
0C3B 0 430B                   BSI   3 11        GO PRINT VIA MER      SRC       80713310
0C3C 0 E005                   DC      /E005     ID 05                           80713320
0C3D 0 0000                   DC      /0000     LINE 0 - FORM 0                 80713330
0C3E 0 434C                   BSI   3 76        YES GO TO RTN EXIT    SRC       80713340
0C3F 0 4323             AVL03 BSI   3 35        GO SET MLSCF ENTRY    SRC       80713350
0C40 1 0C2E                   DC      AVL02                                     80713360
                        ********************************************          80713370
0C41 0 4338                   BSI   3 56        GO TO DIAG MON-START*          80713380
                        ********************************************          80713390
                        *                                                       80713400
                        *                 CONSTANT                              80713410
                        *                                                       80713420
0C42 0 0000             AVLX1 DC      0         NOT AVAIL COUNT                 80713430
                        * *** *** *** *** *** *** *** *** *** *** *** ***      80713440
                        *                                                       80713450
                        *                 COMPARE ROUTINE                       80713460
                        *                                                       80713470
                        * *** *** *** *** *** *** *** *** *** *** *** ***      80713480
0C43 0 C20F             MRCDE LD    2 15        GET WD CT                       80713490
0C44 1 8400 0D25              A     L MER09&1     ADD ADRS IOA&1                  80713500
0C46 0 D034                   STO     MRC23&1   SAVE                            80713510
0C47 0 D048                   STO     PATWD&1                                   80713520
0C48 0 6301                   LDX     3 1       SET TO LINE/FORM                80713530
0C49 0 6B52                   STX     3 MRC0A   SAVE                            80713540
0C4A 0 6938                   STX     1 MRTER&1 SAVE IX 1                       80713550
0C4B 0 694B                   STX     1 MRC08&1                                 80713560
0C4C 0 C124                   LD      1 36      GET ONE                         80713570
0C4D 0 D020                   STO     MRCXC                                     80713580
0C4E 0 C580 0006        MRC22 LD    I1 6        GET FORMAT                      80713590
0C50 0 D004                   STO     MRC24+1   SET FORMAT                      80713600
0C51 0 1801                   SRA     1                                         80713610
0C52 1 4C04 0C6F              BSC   L MRCD1,E     IS FORMAT # 2                 80713620
0C54 0 6700 0000        MRC24 LDX   L3 0          IX F FORMAT 0 OR 1            80713630
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0C56 1 C700 0E13          LD   L3 F04X2     GET PATTERN ADRS          80713640
0C58 0 D009               STO     MRC10+1   SET                       80713650
                     *                                                80713660
                     *                PORTION COMMON TO FORMAT        80713670
                     *                ZERO AND ONE                    80713680
                     *                                                80713690
0C59 0 63EE          MRC03 LDX   3 -18       IX 3 # NUMBER WORDS       80713700
0C5A 0 61F7                LDX   1 -9        IX 1 # NUMBER PATT        80713710
0C5B 1 74FF 0C90           MDX   L  PATWD&1,-1                         80713720
0C5D 1 4400 09E6     MRC01 BSI   L  INTIG    GO SET INT IGNORE    SRC  80713730
0C5F 1 7401 0C6E           MDX   L  MRCXC,1  ADD 1 TO CK WD CT         80713740
0C61 0 C500 0000     MRC10 LD    L1 0        GET PATTERN WD            80713750
0C63 0 D216                STO    2 22       SET IN DST                80713760
0C64 1 F700 09E5           EOR   L3 IOA&20   COMPARE WITH WD RD         80713770
0C66 1 4420 0C89           BSI   L  MRC09,Z  BRANCH # NO COMPARE        80713780
0C68 0 7101                MDX    1 1        DECR IX 1                 80713790
0C69 0 7001                MDX      MRC02    GO DECR IX 3              80713800
0C6A 0 61F7                LDX    1 -9       RELOAD IX 1               80713810
0C6B 0 7301          MRC02 MDX    3 1        DECR IX 3                 80713820
0C6C 0 70F0                MDX      MRC01    LOOP                      80713830
0C6D 0 7012                MDX      MRC0C    GO EXIT                   80713840
0C6E 0 0000          MRCXC DC       0        WD CT FOR CK              80713850
                     *                                                80713860
                     *                FORMAT IS TWO                   80713870
                     *                                                80713880
0C6F 0 1010          MRCD1 SLA      16        ZERO ACCUM                80713890
0C70 0 920F                S      2 15       GET WD CT COMPL           80713900
0C71 0 8124                A      1 36       ADD 1                     80713910
0C72 0 D001                STO      MRC05&1  SAVE                      80713920
0C73 0 6700 0000     MRC05 LDX   L3 0        IX 3 # WD CT - 1          80713930
0C75 1 4400 09E6     MRC06 BSI   L  INTIG    GO SET INT IGNORE    SRC  80713940
0C77 1 7401 0C6E           MDX   L  MRCXC,1  ADD 1 TO CK WD CT         80713950
0C79 0 C216                LD     2 22       GET PATTERN WD            80713960
0C7A 0 F700 0000     MRC23 EOR   L3 0        COMPARE WITH DATA         80713970
0C7C 1 4420 0C89           BSI   L  MRC09,Z  BRANCH # NO COMPARE        80713980
0C7E 0 7301                MDX    3 1        DECR IX 3                 80713990
0C7F 0 70F5                MDX      MRC06    LOOP                      80714000
                     *                                                80714010
                     *                ALL WORDS ARE CHECKED           80714020
                     *                                                80714030
0C80 1 6700 0974     MRC0C LDX   L3 MTTWO    IX3#ADRS COMMON TBL       80714040
0C82 0 6500 0000     MRTER LDX   L1 0        RESTORE IX 1              80714050
                     *                                                80714060
0C84 0 1010                SLA      16       ZERO ACCUM                80714070
0C85 0 D400 0133           STO   L  CKCR     CLEAR INT IGNORE          80714080
0C87 0 4F80 002C           BSC   I3 44       EXIT                 SX   80714090
                     *                                                80714100
                     *                DATA DID NOT COMPARE            80714110
                     *                                                80714120
0C89 0 0000          MRC09 DC       0                                 80714130
0C8A 1 4400 09E6           BSI   L  INTIG    GO SET INT IGNORE    SRC  80714140
0C8C 1 7401 0AD7           MDX   L  RDT8A,1  INCR ERROR SW            80714150
0C8E 0 1000                NOP              .                         80714160
0C8F 0 C700 0000     PATWD LD    L3 0        GET WD IN ERROR           80714170
0C91 0 D217                STO    2 23       SAVE                      80714180
0C92 0 690D                STX    1 MRTE1&1  SAVE IX 1                 80714190
0C93 0 6B0E                STX    3 MRC0F&1  SAVE IX 3                 80714200
0C94 1 6700 0974           LDX   L3 MTTWO    IX 3#ADR COMMON TBL       80714210
0C96 0 6500 0000     MRC08 LDX   L1 0        RESTORE IX 1              80714220
0C98 0 C0D5                LD       MRCXC    GET WD CT FOR CK          80714230
0C99 0 D20B                STO    2 11       SET IN DST                80714240
0C9A 0 430B                BSI    3 11       GO TO PRINT VIA MER  SRC  80714250
0C9B 0 E007                DC       /E007    ID 07                     80714260
0C9C 0 0001          MRC0A DC       /0001    LINE 0 FORM 1             80714270
0C9D 0 C00C                LD       MRCX5    GET NOT LINE 0            80714280
0C9E 0 D0FD                STO      MRC0A                              80714290
0C9F 0 6500 0000     MRTE1 LDX   L1 0        RESTORE IX 1              80714300
0CA1 0 6700 0000     MRC0F LDX   L3 0        RESTORE IX 3              80714310
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0CA3 1 C400 0802          LD   L  SW0       GET SW FNC 0              80714320
0CA5 0 1805               SRA      5                                  80714330
0CA6 0 4804               BSC      E        IS SW 10 ON               80714340
0CA7 0 7CD8               MDX      MRC0C    YES                       80714350
0CA8 1 4C80 0C89          BSC   I  MRC09    RETURN                    80714360
                     *                                                80714370
                     *                CONSTANT                        80714380
                     *                                                80714390
0CAA 0 8C01          MRCX5 DC       /8001    LINE NOT 0                80714400
                     * *** *** *** *** *** *** *** *** *** *** ****    80714410
                     *                                                80714420
                     *                ROUTINE TO SET UP FOR           80714430
                     *                PRINT                           80714440
                     *                                                80714450
                     * *** *** *** *** *** *** *** *** *** *** ****    80714460
0CAB 0 C308          MLGE  LD       3 8        GET RETURN           SE  80714470
0CAC 0 D003                STO      MERF     SAVE                      80714480
0CAD 0 C124                LD     1 36       GET ONE                   80714490
0CAE 0 D115          MLG03 STO    1 21       SET IN LOG/ERROR SW       80714500
0CAF 0 7005                MDX      MER14    GO TO COMMON PORTION      80714510
0CB0 0 0000          MERF  DC       0        RETURN STORAGE            80714520
                     * *** *** *** *** *** *** *** *** *** *** ***    80714530
0CB1 0 C308          MERIE LD       3 11       GET RETURN              80714540
                     * *** *** *** *** *** *** *** *** *** *** ***    80714550
0CB2 0 D0FD                STO      MERF     SAVE                      80714560
0CB3 0 1010                SLA      16                                 80714570
0CB4 0 70F9                MDX      MLG03                              80714580
                     *                                                80714590
                     *                COMMON PORTION                  80714600
                     *                                                80714610
0CB5 0 C116          MER14 LD     1 22       GET MSG ADR               80714620
0CB6 0 D02D                STO      MERX3    SAVE                      80714630
0CB7 0 C21C                LD     2 28       GET RTN NUMBER            80714640
0CB8 1 D400 0800           STO   L  RID      SAVE                      80714650
0CBA 1 6780 0800           LDX   I3 RID      IX 3 # RTN                80714660
0CBC 1 C700 0A48           LD    L3 MONXB    GET ROUTINE ADRS          80714670
0CBE 1 D400 0801           STO   L  RAD      SAVE                      80714680
0CC0 1 6780 0CE4           LDX   I3 MERX3    IX 3 # MSG ADRS           80714690
0CC2 1 C480 0CB0           LD    I  MERF     GET MSG ID                80714700
0CC4 0 D302                STO    3 2        SET IN MSG                80714710
0CC5 1 7401 0CB0           MDX   L  MERF,1   &1 TO RETURN              80714720
0CC7 1 C480 0CB0           LD    I  MERF     GET LINE NO/FORM NO       80714730
0CC9 0 D01A                STO      MERX3    SAVE                      80714740
0CCA 1 7401 0CB0           MDX   L  MERF,1   &1 TO RETURN              80714750
0CCC 0 C0E3                LD       MERF     GET RETURN                80714760
0CCD 0 D117                STO    1 23       SAVE                      80714770
0CCE 0 C015                LD       MERX3    GET LINE/FORM NO          80714780
0CCF 0 1808                SRA      8        SAVE LINE                 80714790
0CD0 0 1008                SLA      8                                  80714800
0CD1 0 D300                STO    3 0        STORE LINE IN MSG         80714810
                     *                                                80714820
                     *                CHECK FORM                      80714830
                     *                                                80714840
0CD2 0 C011                LD       MERX3    GET LINE/FORM             80714850
0CD3 0 1008                SLA      8        SAVE FORM                 80714860
0CD4 0 1808                SRA      8                                  80714870
0CD5 0 800D                A        MER05    ADD TBL ADR               80714880
0CD6 0 D001                STO      MER11&1                            80714890
0CD7 0 4C80 0000     MER11 BSC   I  0                                  80714900
                     *                                                80714910
                     *                FORM TABLE                      80714920
                     *                                                80714930
0CD9 1 0CE5          MER04 DC       MER03    FORM 0                    80714940
0CDA 1 0D0A                DC       MER06         1                    80714950
0CDB 1 0D17                DC       MER07         2                    80714960
0CDC 1 0D21                DC       MER08         3                    80714970
0CDD 1 0D24                DC       MER09         4                    80714980
0CDE 1 0D28                DC       MER12         5                    80714990
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0CDF 1 0D39              DC    MER13       6                          80715000
0CE0 1 0D39              DC    MER13       7                          80715010
0CE1 1 0D3E              DC    MER17       8                          80715020
0CE2 1 0D47              DC    MER18       9                          80715030
0CE3 1 0CD9    MER05     DC    MER04       ADRS OF TBL                80715040
0CE4 0 0000    MERX3     DC    0           TEMP STORAGE               80715050
                         *                                            80715060
                         *                 FORM IS 0                  80715070
                         *                                            80715080
0CE5 0 C124    MER03     LD    1 36        GET ONE                    80715090
0CE6 0 F300              EOR   3 0         SET                        80715100
0CE7 0 D300              STO   3 0                                    80715110
0CE8 0 6806    MER01     STX   3 MER02     SET MSG ADRS IN CALL       80715120
0CE9 0 681B              STX   3 MLG02                                80715130
0CEA 0 C115              LD    1 21        GET LOG/ERROR SW           80715140
0CEB 0 4820              BSC   Z           SKIP # ERROR               80715150
0CEC 0 700D              MDX   MLG01       GO TO LOG                  80715160
                         ********************************************* 80715170
0CED 0 4480 0130 MERY4   BSI   I ERROR     GO PRINT                 * 80715180
0CEF 0 0000      MER02   DC    0           ADR OF MSG               * 80715190
0CF0 1 0D4E              DC    MERY0       BUSY RETURN              * 80715200
0CF1 1 0D66              DC    MERL0       LOOP ON ERROR ADR        * 80715210
                         ********************************************* 80715220
0CF2 0 412E      CLTER   BSI   1 46        SET IX 3                 SRC 80715230
0CF3 0 4D80 0017         BSC   I1 23       EXIT                     SX  80715240
                         *                                            80715250
                         *                                            80715260
                         *                 BUSY RETURN                80715270
                         *                                            80715280
0CF5 0 C116      MERY1   LD    1 22        GET ADRS OF MSG            80715290
0CF6 0 D001              STO   MERY2&1     SAVE                       80715300
0CF7 0 6700 0000 MERY2   LDX   L3 0        IX 3 # ADRS OF MSG         80715310
0CF9 0 70EE              MDX   MER01                                   80715320
                         *                                            80715330
                         *                 CALL LOG                   80715340
                         *                                            80715350
0CFA 0 C302      MLG01   LD    3 2         GET MSG ID                 80715360
0CFB 0 F00D              EOR   MLGX0                                  80715370
0CFC 1 4C18 0D03         BSC   L MLG04,&-  BRANCH # PROG COMP         80715380
0CFE 1 C400 0802         LD    L SW0                                  80715390
0D00 0 1802              SRA   2                                      80715400
0D01 1 4C04 0CF2         BSC   L CLTER,E   BRANCH IF BYPASS LOG       80715410
                         ********************************************* 80715420
0D03 0 4480 012F MLG04   BSI   I LOG       GO PRINT                 * 80715430
0D05 0 0000      MLG02   DC    0           ADR OF MSG               * 80715440
0D06 1 0D4E              DC    MERY0       BUSY RETURN              * 80715450
0D07 0 0000      MLTER   DC    0           TERM ADRS                * 80715460
                         ********************************************* 80715470
0D08 0 70E9              MDX   CLTER                                  80715480
0D09 0 D001      MLGX0   DC    /D001       ID 01# PROG COMPLETE       80715490
                         *                                            80715500
                         *                 FORM IS 1                  80715510
                         *                                            80715520
0D0A 0 C208      MER06   LD    2 11        GET WD CT FOR CK           80715530
0D0B 0 D305              STO   3 5         SET IN MSG                 80715540
0D0C 0 C216              LD    2 22        GET PATTERN WD             80715550
0D0D 0 D306              STO   3 6         SET IN MSG                 80715560
0D0E 0 C20A              LD    2 10        GET REC CT                 80715570
0D0F 0 9124              S     1 36        SUB 1                      80715580
0D10 0 D304              STO   3 4         SET IN MSG                 80715590
0D11 0 C217              LD    2 23        GET WD READ                80715600
0D12 0 D307      MER19   STO   3 7         SET IN MSG                 80715610
0D13 0 C300              LD    3 0         GET LINE NO                80715620
0D14 0 F031              EOR   MERY5       SET WD CT # 5              80715630
0D15 0 D300              STO   3 0                                    80715640
0D16 0 70D1              MDX   MER01       GO PRINT                   80715650
                         *                                            80715660
                         *                 FORM IS 2                  80715670
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                         *                                            80715680
0D17 0 C208      MER07   LD    2 8         GET DSW                    80715690
0D18 0 D305              STO   3 5         SET IN MSG                 80715700
0D19 0 C20A      MER10   LD    2 10        GET REC CT                 80715710
0D1A 0 9124              S     1 36        SUB ONE                    80715720
0D1B 0 D304              STO   3 4         SET IN MSG                 80715730
0D1C 0 C300      MER16   LD    3 0                                    80715740
0D1D 0 F002              EOR   MERX4       SET WC                     80715750
0D1E 0 D300              STO   3 0                                    80715760
0D1F 0 70C8              MDX   MER01       GO PRINT                   80715770
0D20 0 0003      MERX4   DC    3           WD CT # 3                  80715780
                         *                                            80715790
                         *                 FORM IS 3                  80715800
                         *                                            80715810
0D21 0 C215      MER08   LD    2 21        GET ERROR CTRL             80715820
0D22 0 D305              STO   3 5         SET IN MSG                 80715830
0D23 0 70F5              MDX   MER10       SET WC                     80715840
                         *                                            80715850
                         *                 FORM IS 4                  80715860
                         *                                            80715870
0D24 1 C400 09D2 MER09   LD    L IOA&1     GET REC NO READ            80715880
0D26 0 D305              STO   3 5         SET IN MSG                 80715890
0D27 0 70F1              MDX   MER10       GO COMPLETE MSG            80715900
                         *                                            80715910
                         *                 FORM IS 5                  80715920
                         *                                            80715930
0D28 0 C218      MER12   LD    2 24        GET PROG CT                80715940
0D29 0 D304              STO   3 4         SET IN MSG                 80715950
0D2A 0 C20C              LD    2 12        GET TOTAL WRT CT           80715960
0D2B 0 D305              STO   3 5         SET IN MSG                 80715970
0D2C 0 C20D              LD    2 13        GET TOTAL RD CT            80715980
0D2D 0 D306              STO   3 6         SET IN MSG                 80715990
0D2E 0 C20E              LD    2 14        GET TOTAL RWD CT           80716000
0D2F 0 D307              STO   3 7         SET IN MSG                 80716010
0D30 0 C214              LD    2 20        GET TOTAL ERASE CT         80716020
0D31 0 D308              STO   3 8         SET IN MSG                 80716030
0D32 0 C209              LD    2 9         GET TOTAL TAPE PASS        80716040
0D33 0 D309              STO   3 9         SET IN MSG                 80716050
0D34 0 C300              LD    3 0         GET LINE                   80716060
0D35 0 F002              EOR   MERX9       SET WD CT                  80716070
0D36 0 D300              STO   3 0                                    80716080
0D37 0 7080              MDX   MER01       GO PRINT                   80716090
0D38 0 0007      MERX9   DC    7           WD CT # 7                  80716100
                         *                                            80716110
                         *                 FORM IS 6 OR 7             80716120
                         *                                            80716130
0D39 0 C206      MER13   LD    2 6         GET EXP WD CT              80716140
0D3A 0 D304              STO   3 4         SET IN MSG                 80716150
0D3B 0 C205              LD    2 5         GET REC WD CT              80716160
0D3C 0 D305              STO   3 5         SET IN MSG                 80716170
0D3D 0 70DE              MDX   MER16       GO SET MSG WD CT           80716180
                         *                                            80716190
                         *                 FORM IS 8                  80716200
                         *                                            80716210
0D3E 0 C210      MER17   LD    2 16        GET RECOVERED RD CT        80716220
0D3F 0 D304              STO   3 4         SET IN MSG                 80716230
0D40 0 C211              LD    2 17        GET RECOVERED WT CT        80716240
0D41 0 D305              STO   3 5         SET IN MSG                 80716250
0D42 0 C212              LD    2 18        GET UNRECOVERED READ       80716260
0D43 0 D306              STO   3 6         SET IN MSG                 80716270
0D44 0 C213              LD    2 19        GET UNRECOVERED WRT        80716280
0D45 0 70CC              MDX   MER19       GO COMPLETE MSG            80716290
0D46 0 0005      MERY5   DC    5           WD CT # 5                  80716300
                         *                                            80716310
                         *                 FORM IS 9                  80716320
                         *                                            80716330
0D47 0 C203      MER18   LD    2 3         GET FNC & MOD              80716340
0D48 0 D304              STO   3 4         SET IN MSG                 80716350
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0D49 0 C300          LD    3 0          GET LINE NO                  80716360
0D4A 1 F400 0974     EOR   L MTTWO      SET WD CT # 2                80716370
0D4C 0 D300          STO   3 0          SAVE                         80716380
0D4D 0 709A          MDX     MER01      GO PRINT                     80716390
                     *                                               80716400
                     *                  BUSY RETURNS                 80716410
                     *                                               80716420
0D4E 0 412E     MERY0 BSI   1 46         SET IX 3              SRC    80716430
0D4F 0 4323           BSI   3 35         SET MLSCF ENTRY       SRC    80716440
0D50 1 0CF5           DC      MERY1                                    80716450
                     ***********************************************   80716460
0D51 0 4338           BSI   3 56         GO TO DIAG MON START*        80716470
                     ***********************************************   80716480
                     *                                               80716490
                     *                  DR 0 MSG                     80716500
                     *                                               80716510
0D52 0 0000     MERX0 DC      0          LINE NO/WD CT         0      80716520
0D53 0 0000           DC      0          HEX/DEC SW            1      80716530
0D54 0 0000           DC      0          MSG ID                2      80716540
                     *                                               80716550
                     *                                               80716560
0D55 0 0000           DC      0          UNIT NUMBER           3      80716570
0D56 0 0000           DC      0          MOD 0                 4      80716580
0D57 0 0000           DC      0          MOD 1                 5      80716590
0D58 0 0000           DC      0          MOD 2                 6      80716600
0D59 0 0000           DC      0          MOD 3                 7      80716610
0D5A 0 0000           DC      0          MOD 4                 8      80716620
0D5B 0 0000           DC      0          MOD 5                 9      80716630
                     *                                               80716640
                     *                  DR 1 MSG                     80716650
                     *                                               80716660
0D5C 0 0000     MERx1 DC      0          LINE NO/WD CT         0      80716670
0D5D 0 0000           DC      0          HEX/DEC SW            1      80716680
0D5E 0 0000           DC      0          MSG ID                2      80716690
                     *                                               80716700
                     *                                               80716710
0D5F 0 0001           DC      1          UNIT NUMBER           3      80716720
0D60 0 0000           DC      0          MOD 0                 4      80716730
0D61 0 0000           DC      0          MOD 1                 5      80716740
0D62 0 0000           DC      0          MOD 2                 6      80716750
0D63 0 0000           DC      0          MOD 3                 7      80716760
0D64 0 0000           DC      0          MOD 4                 8      80716770
0D65 0 0000           DC      0          MOD 5                 9      80716780
                     *                                               80716790
                     *                  LOOP ON ERROR ENTRIES        80716800
                     *                                               80716810
0D66 0 4323     MERL0 BSI   3 35         GO SET MLSCF ENTRY    SRC    80716820
0D67 1 0A2D           DC      MON09                                    80716830
0D68 0 1010     MERL1 SLA     16         ZERO ACCUM                   80716840
0D69 1 D400 08CC      STO   L ACMT       SET IN DR SEL                80716850
0D6B 0 D21A           STO   2 26         SET IN DR BUSY SW            80716860
0D6C 0 D21B           STO   2 27         SET IN DR AVAL SW            80716870
0D6D 0 4351           BSI   3 81         GO RELEASE DEVICE     SRC    80716880
                     ***********************************************   80716890
0D6E 0 4338           BSI   3 56         GO TO DIAG MON START*        80716900
                     ***********************************************   80716910
                     * *** *** *** *** *** *** *** *** *** *** ****   80716920
                     *                                               80716930
                     *                  ROUTINE TO SET I/O AREA      80716940
                     *                                               80716950
                     * *** *** *** *** *** *** *** *** *** *** ****   80716960
0D6F 0 C20F     MRSCE LD      2 15         GET WD CT             SE   80716970
0D70 0 D001           STO     MRSC1&1                                  80716980
0D71 0 6700 0000 MRSC1 LDX    L3 0         IX 3 # WD CT                80716990
0D73 1 C480 09A3      LD    I MRSC       GET DATA WD                  80717000
0D75 1 D700 09D1 MRSC2 STO    L3 IOA       SET IN I/O AREA              80717010
0D77 0 73FF           MDX     3 -1       DECR IX 3                    80717020
0D78 0 70FC           MDX     MRSC2      LOOP                         80717030
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0D79 1 7401 09A3      MDX   L MRSC,1     &1 TO RETURN                 80717040
0D7B 0 412E           BSI     1 46       SET IX 3              SRC    80717050
0D7C 1 4C80 09A3      BSC   I MRSC       RETURN                SX     80717060
                     * *** *** *** *** *** *** *** *** *** *** ****   80717070
                     *                                               80717080
                     *                  ROUTINE TO SAVE DRIVE        80717090
                     *                  SELECTION FOR USE BY THE     80717100
                     *                  INTERRUPT ROUTINE            80717110
                     *                                               80717120
                     * *** *** *** *** *** *** *** *** *** *** ****   80717130
0D7E 0 C35A     STACE LD      3 90         GET RETURN            SE   80717140
0D7F 0 D10E           STO     1 14         SAVE                       80717150
0D80 1 C400 08CC STAC1 LD     L ACMT       GET DR SEL                 80717160
0D82 1 4C20 0D8A      BSC   L STAC2,Z    BRANCH # NOT CLEAR           80717170
0D84 0 C201           LD      2 1        GET AREA CODE                80717180
0D85 0 F125           EOR     1 37       SET DRIVE SEL                80717190
0D86 1 D400 08CC      STO   L ACMT                                    80717200
0D88 0 4D80 000E      BSC   I1 14        EXIT                  SX     80717210
                     *                                               80717220
                     *                  ENTRY NOT CLEAR-SET RETURN   80717230
                     *                                               80717240
0D8A 0 4323     STAC2 BSI   3 35         GO SET MLSCF ENTRY    SRC    80717250
0D8B 1 0D80           DC      STAC1                                    80717260
                     ***********************************************   80717270
0D8C 0 4338           BSI   3 56         GO TO DIAG MON START*        80717280
                     ***********************************************   80717290
                     * *** *** *** *** *** *** *** *** *** *** ****   80717300
                     *                                               80717310
                     *                  ROUTINE TO REQUEST DEVICE    80717320
                     *                                               80717330
                     * *** *** *** *** *** *** *** *** *** *** ****   80717340
0D8D 0 C354     MTREE LD      3 84         GET RETURN            SE   80717350
0D8E 0 D12B           STO     1 43       SAVE                       80717360
0D8F 1 C400 0815 MTRE1 LD     L EDIT       GET DDEF                   80717370
0D91 0 4828           BSC       &Z       IS DEVICE REQUESTED        80717380
0D92 0 700D           MDX       MTBSY    YES                        80717390
0D93 0 C124           LD      1 36       GET A XTNT OF ONE          80717400
0D94 1 D400 0818      STO   L INTSW      SET IO SW TO ON            80717410
                     ***********************************************   80717420
0D96 0 4480 0131      BSI   I REQDV       REQUEST DEVICE        *    80717430
0D98 1 0DA0           DC      MTBSY      BUSY RETURN           *    80717440
0D99 1 0815           DC      EDIT       ADRS OF DDEF          *    80717450
0D9A 1 0819           DC      MTIO       ADRS OF DVA           *    80717460
0D9B 1 080E           DC      TERM       ADRS TERMINATOR       *    80717470
                     ***********************************************   80717480
0D9C 0 412E     MTRE2 BSI     1 46       SET IX 3              SRC    80717490
0D9D 0 435A           BSI     3 90       GO SET DR SEL         SRC    80717500
0D9E 0 4D80 002B      BSC   I1 43        EXIT                  SX     80717510
                     *                                               80717520
                     *                  DEVICE IS BUSY               80717530
                     *                                               80717540
0DA0 0 412E     MTBSY BSI     1 46       SET IX 3              SRC    80717550
0DA1 0 4323           BSI     3 35       GO SET MLSCF ENTRY    SRC    80717560
0DA2 1 0D8F           DC      MTRE1                                    80717570
                     ***********************************************   80717580
0DA3 0 4338           BSI   3 56         GO TO DIAG MON START*        80717590
                     ***********************************************   80717600
                     * *** *** *** *** *** *** *** *** *** *** ****   80717610
                     *                                               80717620
                     *                  ROUTINE TO RELEASE DEVICE    80717630
                     *                                               80717640
                     * *** *** *** *** *** *** *** *** *** *** ****   80717650
0DA4 0 C351     MTRLE LD      3 81         GET RETURN            SE   80717660
0DA5 0 D12C           STO     1 44       SAVE                       80717670
0DA6 1 C400 0815      LD    L EDIT       GET DDEF                   80717680
0DA8 0 4810           BSC       -        IS DEVICE REQUESTED        80717690
0DA9 0 7004           MDX       MTRL2    NO                         80717700
                     ***********************************************   80717710
```

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ODAA 0 4480 0132   MTRL1 BSI  I  RELDV     RELEASE DEVICE       *      80717720
ODAC 1 0815              DC     EDIT      ADRS OF DDEF         *      80717730
ODAD 1 080E              DC     TERM      ADRS TERMINATOR      *      80717740
                         ********************************************* 80717750
ODAE 0 412E        MTRL2 BSI    1 46      SET IX 3                SRC  80717760
ODAF 0 4D80 002C         BSC   I1 44      EXIT                    SX   80717770
                         *                                             80717780
                         *                                             80717790
                         * *** *** *** *** *** *** *** *** *** *** **** 80717800
                         *              ROUTINE TO SET INTERNAL        80717810
                         *              INTRPT IGNORE IN MONITOR       80717820
                         *                                             80717830
                         * *** *** *** *** *** *** *** *** *** *** **** 80717840
ODB1 1 C400 0813   INTIE LD   L  TERM&5    GET ONLINE IND              80717850
ODB3 1 4CA0 09E6         BSC  I  INTIG,Z   BR IF NOT ZERO              80717860
ODB5 1 C400 07FF         LD   L  PID       GET PROG ID                 80717870
ODB7 0 D400 0133         STO  L  CKCR      SET IN MONITOR              80717880
ODB9 1 4C80 09E6         BSC  I  INTIG     EXIT                    SX  80717890
                         *                                             80717900
                         *                                             80717910
                         * *** *** *** *** *** *** *** *** *** *** **** 80717920
                         *                                             80717930
                         *              ROUTINE NUMBER 1               80717940
                         *              REWIND TEST                    80717950
                         *                                             80717960
                         * *** *** *** *** *** *** *** *** *** *** **** 80717970
ODBB 0 4311        F01AA BSI    3 17      GO REWIND               SRC  80717980
ODBC 0 434C              BSI    3 76      ROUTINE EXIT                 80717990
                         * *** *** *** *** *** *** *** *** *** *** **** 80718000
                         *                                             80718010
                         *              ROUTINE NUMBER 2               80718020
                         *              WRITE-BACKSPACE-READ           80718030
                         *              20 WORDS PER RECORD            80718040
                         *              ALL ONES PATTERN               80718050
                         *                                             80718060
                         * *** *** *** *** *** *** *** *** *** *** **** 80718070
ODBD 0 4311        F02AA BSI    3 17      GO REWIND               SRC  80718080
ODBE 0 4335        F02AB BSI    3 53      GO TO SET UP RTN 2      SRC  80718090
ODBF 0 432F              BSI    3 47      GO SET I/O AREA         SRC  80718100
ODC0 0 FFFF        F02X2 DC       /FFFF                               80718110
ODC1 0 4317              BSI    3 23      GO WRITE                SRC  80718120
ODC2 0 C207              LD     2 7       IS DR AT TM                  80718130
ODC3 0 4820              BSC      Z                                     80718140
ODC4 0 434C              BSI    3 76      YES - ROUTINE EXIT           80718150
ODC5 0 430E              BSI    3 14      GO BACKSPACE            SRC  80718160
ODC6 0 432F              BSI    3 47      GO SET I/O AREA         SRC  80718170
ODC7 0 0000              DC       0                                   80718180
ODC8 0 C0F7              LD       F02X2   GET PATTERN                  80718190
ODC9 0 D216              STO    2 22      SET IN DST                   80718200
ODCA 0 4314              BSI    3 20      GO READ                 SRC  80718210
ODCB 0 0002              DC       2                                   80718220
                         *                                             80718230
ODCC 0 4323              BSI    3 35      GO SET MLSCF ENTRY      SRC  80718240
ODCD 1 0DBE              DC       F02AB                               80718250
ODCE 0 1010        F02AD SLA      16        ZERO ACCUM                  80718260
ODCF 0 D21B              STO    2 27      SET IN DR AVAL SW            80718270
                         ********************************************* 80718280
ODD0 0 4338              BSI    3 56      GO TO DIAG MON START*        80718290
                         ********************************************* 80718300
                         * *** *** *** *** *** *** *** *** *** *** *** 80718310
                         *                                             80718320
                         *              ROUTINE NUMBER 3               80718330
                         *              WRITE TO EOT-REWIND-READ       80718340
                         *              TO EOT                         80718350
                         *              20 WORDS PER RECORD            80718360
                         *              FLOATING ZERO PATTERN          80718370
                         *                                             80718380
                         * *** *** *** *** *** *** *** *** *** *** *** 80718390
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ODD1 0 1010        F03AA SLA      16        RTN 3 ENTRANCE              80718400
ODD2 0 7001              MDX      F03AB     GO TO COMMON RTN            80718410
                         * *** *** *** *** *** *** *** *** *** *** *** 80718420
                         *                                             80718430
                         *              ROUTINE NUMBER 4               80718440
                         *              WRITE TO EOT-REWIND-           80718450
                         *              READ TO EOT                    80718460
                         *              20 WORDS PER RECORD            80718470
                         *              FLOATING ONE PATTERN           80718480
                         *                                             80718490
                         * *** *** *** *** *** *** *** *** *** *** *** 80718500
ODD3 0 C124        F04AA LD     1 36      RTN 4 ENTRANCE              80718510
                         * *** *** *** *** *** *** *** *** *** *** *** 80718520
ODD4 0 D118        F03AB STO    1 24      SAVE                        80718530
ODD5 0 4311              BSI    3 17      GO REWIND               SRC  80718540
ODD6 0 4335        F04AE BSI    3 53      GO TO SET UP RTN 2      SRC  80718550
ODD7 0 C118              LD     1 24      GET RTN SW                   80718560
ODD8 0 D001              STO      F04AJ&1 SET                          80718570
ODD9 0 6700 0000   F04AJ LDX    L3 0       IX 3 # 0 OR 1               80718580
ODDB 1 C700 0E13         LD     L3 F04X2     GET PATTRN ADDRS          80718590
ODDD 0 D004              STO      F04AB&1 SET                          80718600
ODDE 0 63EE              LDX    3 -18                                  80718610
ODDF 0 6A0C              STX    2 F04AD&1 SAVE IX 2                    80718620
ODE0 0 62F7              LDX    2 -9                                   80718630
ODE1 0 C600 0000   F04AB LD     L2 0       GET WORD                    80718640
ODE3 1 D700 09E5         STO    L3 IOA&20  SET IN I/O AREA             80718650
ODE5 0 7201              MDX    2 1        DECR IX 2                   80718660
ODE6 0 7001              MDX      F04AC                                80718670
ODE7 0 62F7              LDX    2 -9       RELOAD IX 2                 80718680
ODE8 0 7301        F04AC MDX    3 1        DECR IX 3                   80718690
ODE9 0 70F7              MDX      F04AB    LOOP                        80718700
ODEA 0 412E              BSI    1 46      SET IX 3                SRC  80718710
ODEB 0 6600 0000   F04AD LDX    L2 0       RESTORE IX 2                80718720
ODED 1 C400 0802         LD     L  SW0     GET SW FNC 0                80718730
ODEF 0 1007              SLA      7                                    80718740
ODF0 1 4C10 0DF4         BSC    L F04AN,-  BRANCH # NOT CRC CK         80718750
ODF2 0 C02B              LD       MTFZ     GET F7FD                    80718760
ODF3 0 D20A              STO    2 10       SET AS REC NO               80718770
ODF4 0 4317        F04AN BSI    3 23      GO WRITE                SRC  80718780
ODF5 0 C207              LD     2 7        GET TM SW                   80718790
ODF6 0 4820              BSC      Z        IS DRIVE AT EOT             80718800
ODF7 0 7005              MDX      F04AF    YES                         80718810
ODF8 0 4323              BSI    3 35      GO SET MLSCF ENTRY      SRC  80718820
ODF9 1 0DD6              DC       F04AE                                80718830
ODFA 0 1010        F04B0 SLA      16        ZERO ACCUM                  80718840
ODFB 0 D21B              STO    2 27       SET IN DR AVAL SW           80718850
                         ********************************************* 80718860
ODFC 0 4338              BSI    3 56      GO TO DIAG MON-START*        80718870
                         ********************************************* 80718880
ODFD 0 1010        F04AF SLA      16                                   80718890
ODFE 0 D21B              STO    2 27       SET IN DR AVAL SW           80718900
ODFF 0 4311              BSI    3 17      GO REWIND               SRC  80718910
0E00 0 4335        F04AG BSI    3 53      GO TO SET UP RTN 2      SRC  80718920
0E01 0 432F              BSI    3 47      GO SET I/O AREA         SRC  80718930
0E02 0 0000              DC       0                                   80718940
0E03 0 C118              LD     1 24       GET RTN SW                  80718950
0E04 0 D001              STO      F04AK    GET FORMAT NO               80718960
0E05 0 4314              BSI    3 20      GO READ                 SRC  80718970
0E06 0 0000        F04AK DC       0                                   80718980
                         *                                             80718990
0E07 0 C204              LD     2 4        GET TM SW                   80719000
0E08 0 4820              BSC      Z        WAS TM READ                 80719010
0E09 0 7003              MDX      F04AH    YES                         80719020
0E0A 0 4323              BSI    3 35      GO SET MLSCF ENTRY      SRC  80719030
0E0B 1 0E00              DC       F04AG                                80719040
0E0C 0 70ED              MDX      F04B0                                80719050
                         *                                             80719060
0E0D 1 C400 0802   F04AH LD     L  SW0     GET SW FNC 0                80719070
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0E0F 0 1007          SLA     7
0E10 0 4828          BSC     &Z          IS RD ONLY SW ON                80719090
0E11 0 70EB          MDX     F04AF       YES                             80719100
0E12 0 434C     F04AM BSI    3 76        ROUTINE EXIT                    80719110
                    *                                                    80719120
                    *                CONSTANTS                           80719130
                    *                                                    80719140
0E13 1 0E27     F04X2 DC     MTFZ&9      PATTERN ADRS                    80719150
0E14 1 0E1E           DC     MTF1&9                                      80719160
                    * *** *** *** *** *** *** *** *** *** *** *** ****   80719170
                    *                                                    80719180
                    *                FLOATING ONE PATTERN                80719190
                    * *** *** *** *** *** *** *** *** *** *** *** ****   80719200
                    *                                                    80719210
0E15 0 0802     MTF1  DC     /0802       FLOATING ONE PATTERN            80719220
0E16 0 8040           DC     /8040                                       80719230
0E17 0 2000           DC     /2000                                       80719240
0E18 0 1001           DC     /1001                                       80719250
0E19 0 0408           DC     /0408                                       80719260
0E1A 0 0280           DC     /0280                                       80719270
0E1B 0 4020           DC     /4020                                       80719280
0E1C 0 C010           DC     /0010                                       80719290
0E1D 0 0104           DC     /0104                                       80719300
                    * *** *** *** *** *** *** *** *** *** *** *** ****   80719330
                    *                                                    80719340
                    *                FLOATING ZERO PATTERN               80719350
                    *                                                    80719360
                    * *** *** *** *** *** *** *** *** *** *** *** ****   80719370
0E1E 0 F7FD     MTFZ  DC     /F7FD       FLOATING ZERO PATTERN           80719380
0E1F 0 7FBF           DC     /7FBF                                       80719390
0E20 0 DFFF           DC     /DFFF                                       80719400
0E21 0 EFFE           DC     /EFFE                                       80719410
0E22 0 FBF7           DC     /FBF7                                       80719420
0E23 0 FD7F           DC     /FD7F                                       80719430
0E24 0 BFDF           DC     /BFDF                                       80719440
0E25 0 FFEF           DC     /FFEF                                       80719450
0E26 0 FEFB           DC     /FEFB                                       80719460
                    * *** *** *** *** *** *** *** *** *** *** *** ****   80719470
                    *                                                    80719480
                    *                ROUTINE NUMBER 5                    80719490
                    *                WRITE TO EOT-REWIND                 80719500
                    *                READ TO EOT                         80719510
                    *                8 WORDS PER RECORD                  80719520
                    *                ALL ZERO PATTERN                    80719530
                    *                                                    80719540
                    * *** *** *** *** *** *** *** *** *** *** *** ****   80719550
0E27 0 1010     F05AA SLA     16                                         80719560
0E28 0 7001           MDX     F05AB                                      80719570
                    * *** *** *** *** *** *** *** *** *** *** *** ****   80719580
                    *                                                    80719590
                    *                ROUTINE NUMBER 6                    80719600
                    *                WRITE TO EOT-REWIND                 80719610
                    *                READ TO EOT                         80719620
                    *                8 WORDS PER RECORD                  80719630
                    *                ALT ONES PATTERN                    80719640
                    *                                                    80719650
                    * *** *** *** *** *** *** *** *** *** *** *** ****   80719660
0E29 0 C124     F06AA LD     1 36                                        80719670
                    * *** *** *** *** *** *** *** *** *** *** *** ****   80719680
0E2A 0 D119     F05AB STO    1 25        SAVE                            80719690
0E2B 0 4311           BSI    3 17        GO REWIND              SRC      80719700
0E2C 0 4335     F06AB BSI    3 53        GO TO SET UP RTN 2     SRC      80719710
0E2D 0 C342           LD     3 66        GET WC # 8                      80719720
0E2E 0 D20F           STO    2 15        SET IN DST                      80719730
0E2F 0 C119           LD     1 25        GET RTN SW                      80719740
0E30 0 D001           STO      F06AG&1                                   80719750
0E31 0 6700 0000 F06AG LDX   L3 0                                        80719760
0E33 1 C700 0E5B      LD     L3 F06X2                                    80719770
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0E35 0 412E          BSI    1 46        SET IX 3               SRC      80719780
0E36 0 D001          STO      F06AH                                     80719790
0E37 0 432F          BSI    3 47        GO SET I/O AREA        SRC      80719800
0E38 0 0000     F06AH DC       0                                         80719810
0E39 0 4317          BSI    3 23        GO WRITE               SRC      80719820
0E3A 0 C207          LD     2 7         GET TM SW                       80719830
0E3B 0 4820          BSC      Z         IS DR AT EOT                    80719840
0E3C 0 7005          MDX      F06AC     YES                             80719850
0E3D 0 4323          BSI    3 35        GO SET MLSCF ENTRY     SRC      80719860
0E3E 1 0E2C          DC       F06AB                                     80719870
0E3F 0 1010     F06AF SLA      16        ZERO ACCUM                      80719880
0E40 0 D218          STO    2 27        SET IN DR AVAL SW               80719890
                    ************************************************     80719900
0E41 0 4338          BSI    3 56        GO TO DIAG MON-START*           80719910
                    ************************************************     80719920
0E42 0 1010     F06AC SLA      16                                        80719930
0E43 0 D218          STO    2 27        SET IN DR AVAL SW               80719940
0E44 0 4311          BSI    3 17        GO REWIND              SRC      80719950
0E45 0 4335     F06AD BSI    3 53        GO TO SET UP RTN 2     SRC      80719960
0E46 0 C342          LD     3 66        GET WC # 8                      80719970
0E47 0 D20F          STO    2 15        SET IN DST                      80719980
0E48 0 432F          BSI    3 47        GO SET I/O AREA        SRC      80719990
0E49 0 0000          DC       0                                         80720000
0E4A 0 C119          LD     1 25        GET RTN SW                      80720010
0E4B 0 D001          STO      F06AJ&1   SAVE                            80720020
0E4C 0 6700 0000 F06AJ LDX   L3 0                                        80720030
0E4E 1 C700 0E5B      LD     L3 F06X2          GET PATTERN               80720040
0E50 0 D216          STO    2 22        SET IN DST                      80720050
0E51 0 412E          BSI    1 46        SET IX 3               SRC      80720060
0E52 0 4314          BSI    3 20        GO READ                SRC      80720070
0E53 0 0002          DC       2                                         80720080
0E54 0 C204          LD     2 4         GET TM SW                       80720090
0E55 0 4820          BSC      Z         IS DR AT TM                     80720100
0E56 0 7003          MDX      F06AE     YES                             80720110
                    *                                                    80720120
0E57 0 4323          BSI    3 35        GO SET MLSCF ENTRY     SRC      80720130
0E58 1 0E45          DC       F06AD                                     80720140
0E59 0 7CE5          MDX      F06AF                                     80720150
                    *                                                    80720160
0E5A 0 434C     F06AE BSI    3 76        ROUTINE EXIT                    80720170
                    *                                                    80720180
                    *                CONSTANTS                           80720190
                    *                                                    80720200
0E5B 0 0000     F06X2 DC       0                                         80720210
0E5C 0 A943           DC       /A943                                     80720220
                    * *** *** *** *** *** *** *** *** *** *** *** ****   80720230
                    *                                                    80720240
                    *                ROUTINE NUMBER 7                    80720250
                    *                CHAINING TEST                       80720260
                    *                                                    80720270
                    * *** *** *** *** *** *** *** *** *** *** *** ****   80720280
0E5D 0 4332     F07AA BSI    3 50        GO TO SET UP RTN 1     SRC      80720290
0E5E 0 432F          BSI    3 47        GO SET I/O AREA        SRC      80720300
0E5F 0 FFFF     F07X2 DC       /FFFF                                     80720310
0E60 0 C028          LD       F07X1     GET 4008                        80720320
0E61 0 D35E          STO    3 94        SET IN TBL 2                    80720330
0E62 0 C343          LD     3 67        GET I/O ADRS                    80720340
0E63 0 D35D          STO    3 93        SET AS CAR CK                   80720350
0E64 0 D370          STO    3 112       SET AS CHAIN TO                 80720360
0E65 0 C027          LD       F07X4     GET 8008                        80720370
0E66 0 D367          STO    3 103       SET TBL 1 WD CT                 80720380
0E67 0 C20A          LD     2 10        GET RECORD NUMBER               80720390
0E68 0 D368          STO    3 104       SET AS FIRST DATA WD            80720400
0E69 0 C34F          LD     3 79        GET 0100                        80720410
0E6A 0 D202          STO    2 2         SET SPECIAL FNC                 80720420
0E6B 0 C123          LD     1 35        GET WRT FNC & MOD               80720430
0E6C 0 F201          EOR    2 1         SET AREA CODE                   80720440
0E6D 0 D303          STO    3 3         SET IOCC                        80720450
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0E6E 0 0B02              XIO   3 2          ISSUE WRITE                    80720460
0E6F 0 4375        F07B0 BSI   3 117        BUSY CK                 SRC    80720470
                   *                                                     80720480
                   *                    INTERRUPT RETURN                 80720490
                   *                                                     80720500
0E70 0 4351        F07IR BSI   3 81         GO RELEASE DEVICE       SRC    80720510
0E71 0 C20A              LD    2 10         GET RECORD COUNT               80720520
0E72 0 8124              A     1 36         ADD ONE                        80720530
0E73 0 D20A              STO   2 10         SAVE                           80720540
                   *                                                     80720550
                   *                    CK RESULTS                       80720560
                   *                                                     80720570
0E74 0 C219        F07AB LD    2 25         GET SENSE WD                   80720580
0E75 0 1003              SLA     3          IS END TBL ON                  80720590
0E76 0 4808              BSC     &                                         80720600
0E77 0 7003              MDX     F07AE      YES                            80720610
0E78 0 4308        F07AD BSI   3 11         GO TO PRINT VIA MER     SRC    80720620
0E79 0 E008              DC      /E008      ID 08                          80720630
0E7A 0 0002              DC      /0002      LINE 0 - FORM 2                80720640
0E7B 0 C208        F07AE LD    2 8          GET SENSE WD                   80720650
0E7C 0 1806              SRA     6          IS OP COMPLETE ON              80720660
0E7D 0 4804              BSC     E                                         80720670
0E7E 0 7003              MDX     F07AG      YES                            80720680
0E7F 0 4308        F07AF BSI   3 11         GO TO PRINT VIA MER     SRC    80720690
0E80 0 E009              DC      /E009      ID 09                          80720700
0E81 0 0002              DC      /0002      LINE 0 - FORM 2                80720710
0E82 0 C00B        F07AG LD    F07X7        GET 16                         80720720
0E83 0 D20F              STO   2 15         SET AS WD CT                   80720730
0E84 0 432F              BSI   3 47         GO SET I/O AREA         SRC    80720740
0E85 0 0000              DC      0                                         80720750
0E86 0 430E              BSI   3 14         GO BACKSPACE            SRC    80720760
0E87 0 C0D7              LD    F07X2        GET PATTERN                    80720770
0E88 0 D216              STO   2 22         SET IN DST                     80720780
0E89 0 4314              BSI   3 20         GO READ                 SRC    80720790
0E8A 0 0002              DC      2                                         80720800
                   *                                                     80720810
0E8B 0 434C              BSI   3 76         ROUTINE EXIT                   80720820
                   *                                                     80720830
                   *                    CONSTANTS                        80720840
                   *                                                     80720850
0E8C 0 4008        F07X1 DC      /4008      WC - 8 & NO EOT                80720860
0E8D 0 8008        F07X4 DC      /8008      WC -8 & CHAIN & EOT            80720870
0E8E 0 0010        F07X7 DC      16         WC # 16                        80720880
                   * *** *** *** *** *** *** *** *** *** *** ***          80720890
                   *                                                     80720900
                   *                    COMMON SET UP ROUTINE 1          80720910
                   *                                                     80720920
                   * *** *** *** *** *** *** *** *** *** *** ***          80720930
0E8F 0 C332        COM0E LD    3 50         GET RETURN              SE     80720940
0E90 0 D11A              STO   1 26         SAVE                           80720950
0E91 0 4329              BSI   3 41         CK DR FOR AVAIL         SRC    80720960
0E92 0 4326              BSI   3 38         GO CK DR FOR BUSY       SRC    80720970
0E93 0 C124              LD    1 36                                        80720980
0E94 0 D21A              STO   2 26         SET DR BUSY                    80720990
0E95 0 4354              BSI   3 84         GO REQUEST DEVICE       SRC    80721000
0E96 0 7003              MDX     COM02                                     80721010
                   * *** *** *** *** *** *** *** *** *** *** ***          80721020
                   *                                                     80721030
                   *                    COMMON SET UP ROUTINE 2          80721040
                   *                                                     80721050
                   * *** *** *** *** *** *** *** *** *** *** ***          80721060
0E97 0 C335        COM1E LD    3 53         GET RETURN              SE     80721070
0E98 0 D11A              STO   1 26         SAVE                           80721080
                   * *** *** *** *** *** *** *** *** *** *** ***          80721090
0E99 0 4326              BSI   3 38         GO CK DR FOR BUSY       SRC    80721100
0E9A 0 4329        COM02 BSI   3 41         GO CK FOR AVAIL         SRC    80721110
0E9B 0 C124              LD    1 36                                        80721120
0E9C 0 D21B              STO   2 27         SET DR NOT AVAIL               80721130
```



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0E9D 0 C345              LD    3 69         GET WC#4014WC#20               80721140
0E9E 0 D35D              STO   3 93         SET IN I/O AREA                80721150
0E9F 0 C344              LD    3 68         GET WC # 20                    80721160
0EA0 0 D20F              STO   2 15         SET IN DST                     80721170
0EA1 0 4D80 001A         BSC   I1 26        EXIT                    SX     80721180
                   * *** *** *** *** *** *** *** *** *** *** ***          80721190
                   *                                                     80721200
                   *                    ROUTINE NUMBER 8                 80721210
                   *                    COMMAND REJECT TEST              80721220
                   *                    ISSUE COMMAND TO BUSY DR         80721230
                   *                                                     80721240
                   * *** *** *** *** *** *** *** *** *** *** ***          80721250
0EA3 0 4332        F08AA BSI   3 50         GO TO SET UP RTN 1      SRC    80721260
0EA4 0 C123              LD    1 35         GET WRT FNC & MOD              80721270
0EA5 0 F201              EOR   2 1          SET AREA CODE                  80721280
0EA6 0 D305              STO   3 5          SET IOCC                       80721290
0EA7 0 C103              LD    1 3          GET ERA MOD & FNC              80721300
0EA8 0 F201              EOR   2 1          SET AREA CODE                  80721310
0EA9 0 D307              STO   3 7          SET IOCC                       80721320
0EAA 0 C34F              LD    3 79         GET 0100                       80721330
0EAB 0 D202              STO   2 2          SET FNC # 1                    80721340
0EAC 0 0B04              XIO   3 4          ISSUE COMMAND                  80721350
0EAD 0 AB00              D     3 0          DELAY 42 TO 82 MICSE           80721360
0EAE 0 0B06              XIO   3 6          ISSUE COMMAND                  80721370
0EAF 0 4375        F08B0 BSI   3 117        BUSY CK                 SRC    80721380
                   *                                                     80721390
                   *                    SPECIAL INTRP RETURN             80721400
                   *                                                     80721410
0EB0 0 4351        F08IR BSI   3 81         GO RELEASE DEVICE       SRC    80721420
0EB1 0 C208              LD    2 8          GET SENSE WD                   80721430
0EB2 0 1002              SLA     2                                         80721440
0EB3 1 4C28 0EBC         BSC   L F08AC,Z&                                  80721450
0EB5 0 C219        F08AD LD    2 25         GET SPEC SENSE WD              80721460
0EB6 0 1002              SLA     2                                         80721470
0EB7 1 4C28 0EBC         BSC   L F08AC,Z&   BRANCH = CMND REJ ON          80721480
0EB9 0 4308              BSI   3 11         PRINT VIA MER           SRC    80721490
0EBA 0 E00A              DC      /E00A      ID 3A                          80721500
0EBB 0 0002              DC      /0002      LINE 0 - FORM 2                80721510
0EBC 0 1010        F08AC SLA       16       CLEAR A REG                    80721520
0EBD 0 D219              STO   2 25         ZERO SP SENSE WD               80721530
0EBE 0 434C              BSI   3 76         ROUTINE EXIT                   80721540
                   * *** *** *** *** *** *** *** *** *** *** ***          80721550
                   *                                                     80721560
                   *                    ROUTINE NUMBER 9                 80721570
                   *                    COMMAND REJECT TEST              80721580
                   *                    ISSUE COMMAND TO WRONG DR        80721590
                   *                                                     80721600
                   * *** *** *** *** *** *** *** *** *** *** ***          80721610
0EBF 0 4332        F09AA BSI   3 50         GO TO SET UP RTN 1      SRC    80721620
0EC0 0 C11B              LD    1 27         GET SENSE FNC & MOD            80721630
0EC1 0 F201              EOR   2 1          SET AREA CODE                  80721640
0EC2 0 D305              STO   3 5          SET IOCC                       80721650
0EC3 0 C103              LD    1 3          GET ERA FNC & MOD              80721660
0EC4 0 F201              EOR   2 1          SET AREA CODE                  80721670
0EC5 0 D307              STO   3 7          SET IOCC                       80721680
0EC6 0 C350              LD    3 80         GET 0200                       80721690
0EC7 0 D202              STO   2 2          SET FNC # 2                    80721700
0EC8 0 0B04              XIO   3 4          ISSUE COMMAND                  80721710
0EC9 0 AB00              D     3 0          DELAY 42 TO 82 MICSE           80721720
0ECA 0 0B04              XIO   3 4          ISSUE COMMAND                  80721730
0ECB 0 AB00              D     3 0          DELAY 42 TO 82 MICSE           80721740
0ECC 0 0B06              XIO   3 6          ISSUE COMMAND                  80721750
0ECD 0 4375              BSI   3 117        BUSY CK                 SRC    80721760
                   * *** *** *** *** *** *** *** *** *** *** ****         80721770
                   *                                                     80721780
                   *                    ROUTINE NUMBER 10                80721790
                   *                    COMMAND REJECT TEST              80721800
                   *                    BACKSPACE INTO LOAD POINT        80721810
```

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                        *
                        * *** *** *** *** *** *** *** *** *** *** *** ****
0ECE 0 4311             F0AAA BSI   3 17        GO REWIND                SRC
0ECF 0 4335                   BSI   3 53        GO TO SET UP RTN 2       SRC
0ED0 0 4317                   BSI   3 23        GO WRITE                 SRC
0ED1 0 430E                   BSI   3 14        GO BACKSPACE             SRC
0ED2 0 4326                   BSI   3 38        CK DR FOR BUSY           SRC
0ED3 0 430E                   BSI   3 14        GO BACKSPACE             SRC
0ED4 0 C20A                   LD    2 10        GET REC NO
0ED5 0 8124                   A     1 36        ADD ONE
0ED6 0 D20A                   STO   2 10        SAVE
0ED7 0 70D8                   MDX     F08IR     GO CK RESULT
                        * *** *** *** *** *** *** *** *** *** *** *** ****
                        *
                        *                 ROUTINE NUMBER 11
                        *                 COMMAND REJECT TEST
                        *                 REWIND AT LOAD POINT
                        *
                        * *** *** *** *** *** *** *** *** *** *** *** ****
0ED8 0 4311             F0BAA BSI   3 17        GO REWIND                SRC
0ED9 0 4332                   BSI   3 50        GO TO SET UP RTN 1       SRC
0EDA 0 C350                   LD    3 80        GET 0200
0EDB 0 D202                   STO   2 2         SET FNC TO 2
0EDC 0 C10B                   LD    1 11        GET RWD FNC & MOD
0EDD 0 F201                   EOR   2 1         SET AREA CODE
0EDE 0 D305                   STO   3 5         SET IOCC
0EDF 0 0B04                   XIO   3 4         ISSUE COMMAND
0EE0 0 4375             F0BAB BSI   3 117       BUSY CK                  SRC
                        * *** *** *** *** *** *** *** *** *** *** *** ****
                        *
                        *                 ROUTINE NUMBER 12
                        *                 STORAGE PROTECT TEST
                        *
                        * *** *** *** *** *** *** *** *** *** *** *** ****
0EE1 1 C400 0813        F0CAA LD    L TERM&5      GET ONLINE IND
0EE3 1 44A8 09C0              BSI   I EXIT,Z&     BYPASS RTN IF ONLINE
                        *
0EE5 0 4335                   BSI   3 53        GO TO SETUP RTN 2        SRC
0EE6 0 432F                   BSI   3 47        GO SET I/O AREA          SRC
0EE7 0 FFFF             F0EAB DC      /FFFF
0EE8 0 4317                   BSI   3 23        GO WRITE                 SRC
0EE9 0 430E                   BSI   3 14        GO BACKSPACE             SRC
0EEA 0 4326                   BSI   3 38        CK DR FOR BUSY           SRC
0EEB 0 C124                   LD    1 36        GET ONE
0EEC 0 D21A                   STO   2 26        SET IN DR BUSY SW
0EED 0 4354                   BSI   3 84        GO REQUEST DEVICE        SRC
0EEE 0 432F                   BSI   3 47        GO SET I/O AREA          SRC
0EEF 0 0000                   DC    0
0EF0 0 6314                   LDX   3 20
0EF1 0 2F41             F0EAC DC      /2F41     STORAGE PROTECT I/O
0EF2 1 09D1                   DC      IOA
0EF3 0 73FF                   MDX   3 -1        DECR IX 3
0EF4 0 70FC                   MDX     F0EAC     LOOP
0EF5 0 412E                   BSI   1 46        SET IX 3                 SRC
0EF6 0 C350                   LD    3 80        GET 0200
0EF7 0 D202                   STO   2 2         SET FNC TO 2
0EF8 0 C122                   LD    1 34        GET READ MOD & FNC
0EF9 0 F201                   EOR   2 1         SET AREA CODE
0EFA 0 D305                   STO   3 5         SET IOCC
0EFB 0 0B04                   XIO   3 4         ISSUE COMMAND
0EFC 0 4375             F0EAH BSI   3 117       BUSY CK                  SRC
                        *
                        *
                        *
                        *
0EFD 0 4351             F0EIR BSI   3 81        GO RELEASE DEVICE        SRC
0EFE 0 C208                   LD    2 8         GET SENSE WD
0EFF 0 1005                   SLA     5
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0F00 1 4C28 0F05        F0EAD BSC   L F0EAD,+Z    BRANCH = SAV STOP ON
0F02 0 430B                   BSI   3 11        PRINT VIA MER            SRC
0F03 0 E00C                   DC      /E00C     ID 3C
0F04 0 0002                   DC      /0002     LINE 0 - FORM 2
0F05 0 6314             F0EAD LDX   3 20
0F06 1 C700 09D1        F0EAE LD    L3 IOA      GET PROTECTED WORD
0F08 0 4820                   BSC     Z         WAS WD DESTROYED
0F09 0 7010                   MDX     F0EAL     YES
0F0A 0 73FF                   MDX   3 -1        DECR IX 3
0F0B 0 70FA                   MDX     F0EAE
0F0C 0 6314             F0EAF LDX   3 20
0F0D 0 2F40             F0EAM DC      /2F40     CLEAR STORAGE PRTCT
0F0E 1 09D1                   DC      IOA
0F0F 0 73FF                   MDX   3 -1        DECR IX 3
0F10 0 70FC                   MDX     F0EAM     LOOP
0F11 0 412E                   BSI   1 46        SET IX 3                 SRC
0F12 0 C208                   LD    2 8         GET SENSE WORD
0F13 0 1804                   SRA   4
0F14 0 4804                   BSC     E         IS WRONG LENGTH REC
0F15 0 7003                   MDX     F0EAK     YES
0F16 0 430B                   BSI   3 11        GO TO PRINT VIA MER      SRC
0F17 0 E00B                   DC      /E00B     ID 0B
0F18 0 0002                   DC      /0002     LINE 0 - FORM 2
0F19 0 434C             F0EAK BSI   3 76        ROUTINE EXIT
                        *
0F1A 1 C700 09D1        F0EAL LD    L3 IOA      GET DESTROYED WD
0F1C 0 D205                   STO   2 5         SET IN DST
0F1D 0 1010                   SLA   16          ZERO ACCUM
0F1E 0 D206                   STO   2 6         SET IN DST
0F1F 0 412E                   BSI   1 46        SET IX 3                 SRC
0F20 0 430B                   BSI   3 11        GO TO PRINT VIA MER      SRC
0F21 0 E00D                   DC      /E00D     ID 0D
0F22 0 0007                   DC      /0007     LINE 0 - FORM 7
0F23 0 70E8                   MDX     F0EAF
                        * *** *** *** *** *** *** *** *** *** *** *** ****
                        *
                        *                 ROUTINE NUMBER 13
                        *                 PROGRAM STOP TEST
                        *
                        * *** *** *** *** *** *** *** *** *** *** *** ****
0F24 0 4335             F0DAA BSI   3 53        GO TO SET UP RTN 2       SRC
0F25 0 4317                   BSI   3 23        GO WRITE                 SRC
0F26 0 430E                   BSI   3 14        GO BACKSPACE             SRC
0F27 0 4326                   BSI   3 38        GO CK FOR BSY            SRC
0F28 0 C124                   LD    1 36        GET ONE
0F29 0 D21A                   STO   2 26        SET DR BUSY SW
0F2A 0 4354                   BSI   3 84        REQ DEVICE               SRC
0F2B 0 C350                   LD    3 80        GET 0200
0F2C 0 D202                   STO   2 2         SET FNC # 2
0F2D 0 C122                   LD    1 34        GET RD FNC & MOD
0F2E 0 F201                   EOR   2 1         SET AREA CODE
0F2F 0 D305                   STO   3 5         SET IOCC
0F30 0 C11C                   LD    1 28        GET PROG STOP FNC&MD
0F31 0 F201                   EOR   2 1         SET AREA CODE
0F32 0 D307                   STO   3 7         SET IOCC
0F33 0 C01E                   LD      F0FX1     GET WD CT # 16383
0F34 0 D35D                   STO   3 93        SET IN I/O AREA
0F35 0 C10D                   LD    1 13        GET SENSE FNC & MOD
0F36 0 F201                   EOR   2 1         SET AREA CODE
0F37 0 F01D                   EOR     F0FX4     SET WD CTR BIT
0F38 0 D303                   STO   3 3         SET IOCC
0F39 0 0B04                   XIO   3 4         ISSUE COMMAND
0F3A 0 0B02                   XIO   3 2         SENSE WD CTR
0F3B 0 D017                   STO     F0FX2     SAVE
0F3C 0 0B06                   XIO   3 6         ISSUE COMMAND
0F3D 0 4375             F0FAC BSI   3 117       BUSY CK                  SRC
                        *
0F3E 0 4351             F0FIR BSI   3 81        GO RELEASE DEVICE        SRC
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0F3F 0 C208          LD    2 8          GET SENSE WD                    80723180
0F40 0 1804          SRA     4                                          80723190
0F41 0 4804          BSC     E          IS WRONG LNGTH REC              80723200
0F42 0 7003          MDX     FOFAB      YES                             80723210
0F43 0 430B          BSI   3 11         GO TO PRINT VIA MER  SRC        80723220
0F44 0 E00E          DC      /E00E      ID 0E                           80723230
0F45 0 0000          DC      /0000      LINE 0-FORM 0                   80723240
0F46 0 C00C  FOFAB   LD      FOFX2      GET WD CTR                      80723250
0F47 0 F00C          EOR     FOFX3                                      80723260
0F48 0 4818          BSC     &-         WAS WD CTR CORRECT              80723270
0F49 0 434C  FOFAD   BSI   3 76         YES ROUTINE EXIT                80723280
0F4A 0 C009          LD      FOFX3      GET WD CT EXPECTED              80723290
0F4B 0 D206          STO   2 6          SET IN DST                      80723300
0F4C 0 C006          LD      FOFX2      GET WD CT REC                   80723310
0F4D 0 D205          STO   2 5          SET IN DST                      80723320
0F4E 0 430B          BSI   3 11         GO TO PRINT VIA MER  SRC        80723330
0F4F 0 E015          DC      /E015      ID 15                           80723340
0F50 0 0006          DC      /0006      LINE 0 FORM 6                   80723350
0F51 0 70F7          MDX     FOFAD                                      80723360
                     *                                                  80723370
                     *              CONSTANTS                           80723380
                     *                                                  80723390
0F52 0 3FFF  FOFX1   DC      16383      WD COUNT                        80723400
0F53 0 0000  FOFX2   DC      0          TEMP STORAGE                    80723410
0F54 0 C000  FOFX3   DC      /C000      EXPECTED WD CT                  80723420
0F55 0 0010  FOFX4   DC      /0010      SNSE WD CTR BIT                 80723430
                     * *** *** *** *** *** *** *** *** *** *** ****     80723440
                     *                                                  80723450
                     *              ROUTINE 17                          80723460
                     *                                                  80723470
                     * *** *** *** *** *** *** *** *** *** *** ****     80723480
0F56 0 C124  F11AA   LD    1 36         GET ONE                         80723490
0F57 0 7001          MDX     F1080                                      80723500
                     * *** *** *** *** *** *** *** *** *** *** ****     80723510
                     *                                                  80723520
                     *              ROUTINE NUMBER 14                   80723530
                     *              WRONG LENGTH RECORD TEST            80723540
                     *              READ 1 MORE WORD THAN WRTN          80723550
                     *                                                  80723560
                     * *** *** *** *** *** *** *** *** *** *** ****     80723570
0F58 0 1010  FOEAA   SLA     16         ZERO ACCUM                      80723580
0F59 0 D129  F1080   STO   1 41         SAVE RTN SW                     80723590
0F5A 0 4335          BSI   3 53         GO TO SET UP RTN 2   SRC        80723600
0F5B 0 4317          BSI   3 23         GO WRITE             SRC        80723610
0F5C 0 430E          BSI   3 14         GO BACKSPACE         SRC        80723620
0F5D 0 4326          BSI   3 38         CK DR FOR BUSY       SRC        80723630
0F5E 0 C124          LD    1 36         GET ONE                         80723640
0F5F 0 D21A          STO   2 26         SET IN DR BUSY SW               80723650
0F60 0 4354          BSI   3 84         GO REQUEST DEVICE    SRC        80723660
0F61 0 C129          LD    1 41         GET RTN SW                      80723670
0F62 0 D001          STO     F10B1&1    SAVE                            80723680
0F63 0 6700 0000 F10B1 LDX  L3 0         IX 3 # RTN SW                   80723690
0F65 1 C700 0F90     LD    L3 F10X4           GET ADD OR SUB            80723700
0F67 0 D002          STO     F10AF      SET                             80723710
0F68 0 412E          BSI   1 46         LD IX 3              SRC        80723720
0F69 0 C345          LD    3 69         GET WC#4014WC#20                80723730
0F6A 0 8124  F10AF   A     1 36         ADD OR SUB                      80723740
0F6B 0 D35D          STO   3 93         SET IN I/O AREA                 80723750
0F6C 0 C350          LD    3 80         GET 0200                        80723760
0F6D 0 D202          STO   2 2          SET FNC # 2                     80723770
0F6E 0 C122          LD    1 34         GET READ MOD & FNC              80723780
0F6F 0 F201          EOR   2 1          SET AREA CODE                   80723790
0F70 0 D305          STO   3 5          SET IOCC                        80723800
0F71 0 0804          XIO   3 4          ISSUE COMMAND                   80723810
0F72 0 4375  F10AB   BSI   3 117        BUSY CK              SRC        80723820
                     *                                                  80723830
                     *                                                  80723840
                     *                                                  80723850
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                     *                                                  80723860
0F73 0 4351  F10IR   BSI   3 81         GO RELEASE DEVICE    SRC        80723870
0F74 0 C208          LD    2 8          GET SENSE WD                    80723880
0F75 0 1804          SRA     4                                          80723890
0F76 0 4804          BSC     E          IS WRONG LNGTH REC              80723900
0F77 0 7003          MDX     F10AC      YES                             80723910
0F78 0 430B          BSI   3 11         GO TO PRINT VIA MER  SRC        80723920
0F79 0 E00F          DC      /E00F      ID 0F                           80723930
0F7A 0 0002          DC      /0002      LINE 0 - FORM 2                 80723940
0F7B 0 C129  F10AC   LD    1 41         GET RTN SW                      80723950
0F7C 0 D001          STO     F10AC&3    SAVE                            80723960
0F7D 0 6700 0000     LDX  L3 0          IX 3 # RTN SW                   80723970
0F7F 0 C205          LD    2 5          GET WD CT                       80723980
0F80 1 F700 0F8D     EOR  L3 F10X2           IS IT # EXPECTED           80723990
0F82 1 4C18 0F8B     BSC  L  F10AD,+-   BRANCH= WD CT CRCT               80724000
0F84 1 C700 0F8D     LD   L3 F10X2           GET EXPCTED WD CT          80724010
0F86 0 D206          STO   2 6          SAVE                            80724020
0F87 0 412E          BSI   1 46         RESTORE IX 3         SRC        80724030
0F88 0 430B          BSI   3 11         PRINT VIA MER        SRC        80724040
0F89 0 E010          DC      /E010      ID 10                           80724050
0F8A 0 0006          DC      /0006      LINE 0 - FORM 6                 80724060
0F8B 0 412E  F10AD   BSI   1 46         SET IX 3             SRC        80724070
0F8C 0 434C          BSI   3 76         ROUTINE EXIT                    80724080
                     *                                                  80724090
                     *              CONSTANTS                           80724100
                     *                                                  80724110
0F8D 0 FFFE  F10X2   DC      /FFFE      RTN 14 EXPECTED WD              80724120
0F8E 0 0001          DC      /0001      RTN 17 EXPECTED WD              80724130
0F8F 0 0000  F10X3   DC      0          RTN SW                          80724140
0F90 0 8124  F10X4   A     1 36         ADD CONSTANT                    80724150
0F91 0 9124  F10X5   S     1 36         SUB CONSTANT                    80724160
                     * *** *** *** *** *** *** *** *** *** *** ****     80724170
                     *                                                  80724180
                     *              ROUTINE NUMBER 15                   80724190
                     *              WRT AND RD TAPE MARK TEST           80724200
                     *                                                  80724210
                     * *** *** *** *** *** *** *** *** *** *** ****     80724220
0F92 0 4335  FOFAA   BSI   3 53         GO TO SET UP RTN 2   SRC        80724230
0F93 0 431A          BSI   3 26         GO WRITE TAPE MARK   SRC        80724240
0F94 0 430E          BSI   3 14         GO BACKSPACE         SRC        80724250
0F95 0 4314          BSI   3 20         GO READ              SRC        80724260
0F96 0 0000          DC      0                                          80724270
0F97 0 C204          LD    2 4          GET TM SW                       80724280
0F98 0 4820          BSC     Z          WAS TM READ                     80724290
0F99 0 7003          MDX     F11AB      YES                             80724300
0F9A 0 430B          BSI   3 11         GO TO PRINT VIA MER  SRC        80724310
0F9B 0 E011          DC      /E011      ID 11                           80724320
0F9C 0 0002          DC      /0002      LINE 0 -FORM 2                  80724330
0F9D 0 C35E  F11AB   LD    3 94         GET TM DATA                     80724340
0F9E 0 F11D          EOR   1 29         CK AGAINST EXPECTED             80724360
0F9F 1 4C18 0FA8     BSC  L  F11AC,+-   BRANCH = CORRECT                 80724370
0FA1 0 C35E          LD    3 94         GET TM DATA                     80724380
0FA2 0 D205          STO   2 5          SAVE                            80724390
0FA3 0 C11D          LD    1 29         GET EXPECTED TM DATA            80724400
0FA4 0 D206          STO   2 6          SAVE                            80724410
0FA5 0 430B          BSI   3 11         PRINT VIA MER        SRC        80724420
0FA6 0 E012          DC      /E012      ID 12                           80724430
0FA7 0 0007          DC      /0007      LINE 0 - FORM 7                 80724440
0FA8 0 434C  F11AC   BSI   3 76         ROUTINE EXIT                    80724450
                     *                                                  80724460
                     * *** *** *** *** *** *** *** *** *** *** ****     80724470
                     *                                                  80724480
                     *              ROUTINE NUMBER 16                   80724490
                     *              SEVEN TRACK FEATURE TEST            80724500
                     *                                                  80724510
                     *              1.  WRITE-BACKSPACE AND             80724520
                     *              READ AT 556 BPI,2 BYTES             80724530
                     *              PER WORD AND ODD PARITY             80724540
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                *
                *                2.  WRITE - BACKSPACE AND          80724550
                *                READ AT 556 BPI,2 BYTES            80724560
                *                PER WORD AND EVEN PARITY           80724570
                *                                                   80724580
                *                                                   80724590
                *                3.  WRITE-BACKSPACE AND            80724600
                *                READ AT 556 BPI,3 BYTES            80724610
                *                PER WORD AND ODD PARITY            80724620
                *                                                   80724630
                *                4.  WRITE-BACKSPACE AND            80724640
                *                READ AT 556 BPI,3 BYTES            80724650
                *                PER WORD AND EVEN PARITY           80724660
                *                                                   80724670
                *                5.  BACKSPACE AND READ AT          80724680
                *                200 BPI,3 BYTES PER WORD           80724690
                *                AND EVEN PARITY                    80724700
                *                                                   80724710
                *                6.  WRITE-BACKSPACE AND            80724720
                *                READ AT 200 BPI, 3 BYTES           80724730
                *                PER WORD AND EVEN PARITY           80724740
                *                                                   80724750
                * *** *** *** *** *** *** *** *** *** *** *** ****  80724760
0FA9 0 4335     F10AA BSI   3 53        GO TO SET UP RTN 2    SRC   80724770
0FAA 0 C200           LD    2 0         GET NUMBER TRACKS           80724780
0FAB 0 4818           BSC     +-        IS THIS A 7 TR DR           80724790
                *                                                   80724800
                *                                                   80724810
                *                                                   80724820
0FAC 0 434C     F12AB BSI   3 76        NO - ROUTINE EXIT           80724830
0FAD 0 C002     F12AC LD      F12AG     CHANGE REC NO               80724840
0FAE 0 D20A           STO   2 10        SET IN DST                  80724850
0FAF 0 432F           BSI   3 47        GO SET I/O AREA       SRC   80724860
0FB0 0 3F30     F12AG DC      /3F30                                 80724870
0FB1 0 C11E           LD    1 30        GET FNC & MOD-WRT           80724880
0FB2 0 D123           STO   1 35        SET WRT FNC & MOD           80724890
0FB3 0 C11F           LD    1 31        GET FNC & MOD -RD           80724900
0FB4 0 D122           STO   1 34        SET AS RD MOD & FNC         80724910
0FB5 0 4317     F12AD BSI   3 23        GO WRITE              SRC   80724920
0FB6 0 430E           BSI   3 14        GO BACKSPACE          SRC   80724930
0FB7 0 432F           BSI   3 47        GO SET I/O AREA       SRC   80724940
0FB8 0 0000           DC    0                                       80724950
0FB9 0 C0F6           LD      F12AG     GET PATTERN                 80724960
0FBA 0 D216           STO   2 22        SET IN DST                  80724970
0FBB 0 4314           BSI   3 20        GO READ               SRC   80724980
0FBC 0 0002           DC    2                                       80724990
                *                                                   80725000
0FBD 0 C122           LD    1 34        GET READ MOD & FNC          80725010
0FBE 0 4804           BSC   E           IS PARITY EVEN              80725020
0FBF 0 7006           MDX     F12AE     YES                         80725030
0FC0 0 F124           EOR   1 36        SET 0001                    80725040
0FC1 0 D122           STO   1 34        SET AS RD MOD & FNC         80725050
0FC2 0 C123           LD    1 35        GET WRT FNC & MOD           80725060
0FC3 0 F124           EOR   1 36        SET 0001                    80725070
0FC4 0 D123           STO   1 35        SET WRT FNC & MOD           80725080
0FC5 0 70EF           MDX     F12AD                                 80725090
                *                                                   80725100
                *                SET PARITY ODD                     80725110
                *                                                   80725120
0FC6 0 1801     F12AE SRA     1                                     80725130
0FC7 0 1001           SLA     1                                     80725140
0FC8 0 D122           STO   1 34        SET AS RD MOD & FNC         80725150
0FC9 0 C123           LD    1 35        GET WRT FNC & MOD           80725160
0FCA 0 1801           SRA     1                                     80725170
0FCB 0 1001           SLA     1                                     80725180
0FCC 0 D123           STO   1 35        SET WRT FNC & MOD           80725190
0FCD 0 1802           SRA     2                                     80725200
                *     BSC     E                                     80725210
0FCE 0 7007           MDX     F12AF                                 80725220
```



```
                *                                                   80725230
                *                SET 3 BYTES/WD                     80725240
                *                                                   80725250
0FCF 0 C122           LD    1 34        GET READ MOD & FNC          80725260
0FD0 0 F346           EOR   3 70        SET 3 BYTES/WD              80725270
0FD1 0 D122           STO   1 34        SET AS RD MOD & FNC         80725280
0FD2 0 C123           LD    1 35        GET WRT FNC & MOD           80725290
0FD3 0 F346           EOR   3 70        SET 3 BYTES/WD              80725300
0FD4 0 D123           STO   1 35        SET WRT FNC & MOD           80725310
0FD5 0 70DF           MDX     F12AD                                 80725320
                *                                                   80725330
0FD6 0 430E     F12AF BSI   3 14        GO BACKSPACE          SRC   80725340
0FD7 0 4326           BSI   3 38        CK DR FOR BUSY        SRC   80725350
0FD8 0 C124           LD    1 36        GET ONE                     80725360
0FD9 0 D21A           STO   2 26        SET IN DR BUSY SW           80725370
0FDA 0 4354           BSI   3 84        GO REQ DEV            SRC   80725380
0FDB 0 C120           LD    1 32        GET FNC & MOD -RD           80725390
0FDC 0 D122           STO   1 34        SET AS RD FNC & MOD         80725400
0FDD 0 F201           EOR   2 1         SET AREA CODE               80725410
0FDE 0 D305           STO   3 5         SET IOCC                    80725420
0FDF 0 C350           LD    3 80        GET 0200                    80725430
0FE0 0 D202           STO   2 2         SET FNC # 2                 80725440
0FE1 0 0804           XIO   3 4         ISSUE COMMAND               80725450
0FE2 0 4375           BSI   3 117       BUSY CK               SRC   80725460
                *                                                   80725470
                *                INTERRUPT RETURN                   80725480
                *                                                   80725490
                *                                                   80725500
                *                                                   80725510
                *                                                   80725520
0FE3 0 4351     F12IR BSI   3 81        GO RELEASE DEVICE     SRC   80725530
0FE4 0 C208           LD    2 8         GET SENSE WD                80725540
0FE5 0 E014           AND     PEND      CK FOR EXPECTED             80725550
0FE6 1 4C18 0FEB      BSC   L F12AK,+-  BRANDH = WD OK               80725560
0FE8 0 4308           BSI   3 11        PRINT VIA MER         SRC   80725570
0FE9 0 E013           DC      /E013     ID 13                       80725580
0FEA 0 0002           DC      /0002     LINE 0 - FORM 2             80725590
0FEB 0 C121     F12AK LD      1 33      GET FNC & MOD-WRT           80725600
0FEC 0 D123           STO   1 35        SET WRT FNC & MOD           80725610
0FED 0 432F           BSI   3 47        GO SET I/O AREA       SRC   80725620
0FEE 0 3F30           DC      /3F30                                 80725630
0FEF 0 4317           BSI   3 23        GO WRITE              SRC   80725640
0FF0 0 430E           BSI   3 14        GO BACKSPACE          SRC   80725650
0FF1 0 432F           BSI   3 47        GO SET I/O AREA       SRC   80725660
0FF2 0 0000           DC    0                                       80725670
0FF3 0 4314           BSI   3 20        GO READ               SRC   80725680
0FF4 0 0002           DC    2                                       80725690
                *                                                   80725700
0FF5 0 C127           LD    1 39        RESTORE RD FNC & MOD        80725710
0FF6 0 D122           STO   1 34        SET AS RD MOD & FNC         80725720
0FF7 0 C128           LD    1 40        RESTORE WT FNC & MOD        80725730
0FF8 0 D123           STO   1 35        SET WRT FNC & MOD           80725740
0FF9 0 70B2           MDX     F12AB                                 80725750
                *                                                   80725760
                *                CONSTANTS                          80725770
                *                                                   80725780
0FFA 0 BD8F     PEND  DC      /BD8F     EXPECTED DSW                80725790
0FFC   08D3           END     MTBEG                                 80725800
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

```
ACMT    08CC  0824 082D 0858 08C3 0A04 0D69 0D80 0D86
AVLX1   0C42  0C35 0C38
AVL01   0C38  0C30 0C33
AVL02   0C2E  0C40
AVL03   0C3F  0C3A
BEGIN   012C  08D3
BSP     0982
BSPE    086C  0983
BSPI2   0B71  088D
BSP02   0B6E
BSP05   0B77
BSP06   0B6F
BSYX2   0C16  0BED 0BF9 0BFD
BSYX3   0C17  0BF2 0C04 0C08
BSY01   0BF9  0BEB
BSY02   0C00  0BF5 0BFB 0C06
BSY03   0BE9  0C19 0C1B
BSY04   0BEE
BSY05   0C04  0BF0
BSY07   0C03
BSY08   0C0A  0BFF
CKAVE   0C2C  099E
CKAVL   099D
CKBSE   0BE7  099B
CKBSY   099A
CKCR    0133  0C85 0DB7
CKDTA   0B03  0AF0 0AF4 0AF7
CLTER   0CF2  0D01 0D08
COM0E   0E8F  09A7
COM00   09A6
COM01   09A9
COM02   0E9A  0E96
COM03   09BD
COM1E   0E97  09AA
COM3E   0B98  09BE
COM3F   08A1  0B89
DBINT   0892  0882
DBIN1   0899  0878 0895
DROTB   08D6  0832 08B9 0C1D
DR1TB   0909  081D 08C0 0C25
DST0    0939  0834 08AF 08B5 0BE9 0C1F 0C2E
DST1    0956  081F 08BC 0BEE 0C27 0C31
DSW     0994
DSWD    0BB8
DSWEN   0BA7  0995
DSWX0   0BBB  0BAF 0BB3 0BB4 0BB8
DSW0    0BAD  0BB2
DSW11   0BB3
DSW13   0BAC  0BB6
DSW8    0BA9
EDIT    0815  0D8F 0D99 0DA6 0DAC
EDIT1   0816  0883
EDIT2   0817  08BA
END     012E  0A1F
EPA     0808
ERA     0991
ERAB    0AB8  088C
ERAE    0AB3  0992
ERROR   0130  0CED
EXIT    09C0  0EE3
EXITE   09AF  09C1
FNCCL   088A  0870
FNCTB   0882  084F
F0AAA   0ECE  0A52
F0BAA   0ED8  0A53
F0BAB   0EE0
F0CAA   0EE1  0A54
F0DAA   0F24  0A55
```



```
F0EAA   0F58  0A56
F0EAB   0EE7
F0EAC   0EF1  0EF4
F0EAD   0F05  0F00
F0EAE   0F06  0F0B
F0EAF   0F0C  0F23
F0EAH   0EFC
F0EAK   0F19  0F15
F0EAL   0F1A  0F09
F0EAM   0F0D  0F10
F0EIR   0EFD  08A6
F0FAA   0F92  0A57
F0FAB   0F46  0F42
F0FAC   0F3D
F0FAD   0F49  0F51
F0FIR   0F3E  08A7
F0FX1   0F52  0F33
F0FX2   0F53  0F3B 0F46 0F4C
F0FX3   0F54  0F47 0F4A
F0FX4   0F55  0F37
F01AA   0DBB  0A49
F02AA   0DBD  0A4A
F02AB   0DBE  0DCD
F02AD   0DCE
F02X2   0DC0  0DC8
F03AA   0DD1  0A4B
F03AB   0DD4  0DD2
F04AA   0DD3  0A4C
F04AB   0DE1  0DDD 0DE9
F04AC   0DE8  0DE6
F04AD   0DEB  0DDF
F04AE   0DD6  0DF9
F04AF   0DFD  0DF7 0E11
F04AG   0E00  0E0B
F04AH   0E0D  0E09
F04AJ   0DD9  0DD8
F04AK   0E06  0E04
F04AM   0E12
F04AN   0DF4  0DF0
F04B0   0DFA  0E0C
F04X2   0E13  0C56 0DDB
F05AA   0E27  0A4D
F05AB   0E2A  0E28
F06AA   0E29  0A4E
F06AB   0E2C  0E3E
F06AC   0E42  0E3C
F06AD   0E45  0E58
F06AE   0E5A  0E56
F06AF   0E3F  0E59
F06AG   0E31  0E30
F06AH   0E38  0E36
F06AJ   0E4C  0E4B
F06X2   0E5B  0E33 0E4E
F07AA   0E5D  0A4F
F07AB   0E74
F07AD   0E78
F07AE   0E7B  0E77
F07AF   0E7F
F07AG   0E82  0E7E
F07B0   0E6F
F07IR   0E70  08A1
F07X1   0E8C  0E60
F07X2   0E5F  0E87
F07X4   0E8D  0E65
F07X7   0E8E  0E82
F08AA   0EA3  0A50
F08AC   0EBC  0EB3 0EB7
F08AD   0EB5
```

```
F08B0  0EAF
F08IR  0EB0  08A2 08A3 08A5 0ED7
F09AA  0EBF  0A51
F10AA  0FA9  0A58
F10AB  0F72
F10AC  0F7B  0F77 0F7C
F10AD  0F8B  0F82
F10AF  0F6A  0F67
F10B0  0F59  0F57
F10B1  0F63  0F62
F10IR  0F73  08A8 08AB
F10X2  0F8D  0F80 0F84
F10X3  0F8F
F10X4  0F90  0F65
F10X5  0F91
F11AA  0F56  0A59
F11AB  0F9D  0F99
F11AC  0FA8  0F9F
F12AB  0FAC  0FF9
F12AC  0FAD
F12AD  0FB5  0FC5 0FD5
F12AE  0FC6  0FBF
F12AF  0FD6  0FCE
F12AG  0FB0  0FAD 0FB9
F12AK  0FEB  0FE6
F12IR  0FE3  08AA
INTIE  0DB1  09E7
INTIG  09E6  0C5D 0C75 0C8A 0DB3 0DB9
INTSW  0818  0822 0868 0D94
IOA    09D1  0976 0978 09B7 0A34 0C64 0D24 0D75 0DE3 0EF2 0F06 0F0E 0F1A
IOCC1  0976
IOCC2  0978
IOCC3  097A  0BAD
IPA    0806
LIV0   0C18  0903
LIV1   0C1A  0936
LOG    012F  0D03
LPA    0807
MER    097F
MERF   0CB0  0CAC 0CB2 0CC2 0CC5 0CC7 0CCA 0CCC
MERL0  0D66  0CF1
MERL1  0D68  09B1
MERX0  0D52  08EC
MERX1  0D5C  091F
MERX3  0CE4  0CB6 0CC0 0CC9 0CCE 0CD2
MERX4  0D20  0D1D
MERX9  0D38  0D35
MERY0  0D4E  0CF0 0D06
MERY1  0CF5  0D50
MERY2  0CF7  0CF6
MERY4  0CED
MERY5  0D46  0D14
MER01  0CE8  0CF9 0D16 0D1F 0D37 0D4D
MER02  0CEF  0CE8
MER03  0CE5  0CD9
MER04  0CD9  0CE3
MER05  0CE3  0CD5
MER06  0D0A  0CDA
MER07  0D17  0CDB
MER08  0D21  0CDC
MER09  0D24  0C44 0CDD
MER1E  0CB1  0980
MER10  0D19  0D23 0D27
MER11  0CD7  0CD6
MER12  0D28  0CDE
MER13  0D39  0CDF 0CE0
MER14  0CB5  0CAF
MER16  0D1C  0D3D
```



```
MER17  0D3E  0CE1
MER18  0D47  0CE2
MER19  0D12  0D45
MLG    097C
MLGE   0CAB  097D
MLGX0  0D09  0CFB
MLG01  0CFA  0CEC
MLG02  0D05  0CE9
MLG03  0CAE  0CB4
MLG04  0D03  0CFC
MLSCF  0809  0859 08C6 0BC0 0BD7 0C01
MLTER  0D07
MONAA  0A1F  0A1B 0A24 0A27
MONAC  0A17
MONXA  0A49
MONXB  0A48  0A5C 0C8C
MONXC  08CA  08B7 08BE
MON00  08AF  08B2
MON01  0A1C  09FA
MON02  0A21  0A12
MON03  09EC  08C4
MON04  09FD  09F5
MON05  0A15  0A07 0A0D
MON09  0A2D  0A44 0D67
MON10  0A3D  0A29
MON12  0A25  09FC 0A14 0A5D 0A6A
MON16  0A2B
MON17  0A2A  0A40
MON18  0A3B  0A39
MON19  0A42  0A46
MON20  0A33  0A36
MRCD   09A0
MRCDE  0C43  09A1
MRCD1  0C6F  0C52
MRCXC  0C6E  0C4D 0C5F 0C77 0C98
MRCX5  0CAA  0C9D
MRC0A  0C9C  0C49 0C9E
MRC0C  0C80  0C6D 0CA7
MRC0F  0CA1  0C93
MRC01  0C5D  0C6C
MRC02  0C6B  0C69
MRC03  0C59
MRC05  0C73  0C72
MRC06  0C75  0C7F
MRC08  0C96  0C4B
MRC09  0C89  0C66 0C7C 0CA8
MRC10  0C61  0C58
MRC22  0C4E
MRC23  0C7A  0C46
MRC24  0C54  0C50
MRSC   09A3  0D73 0D79 0D7C
MRSCE  0D6F  09A4
MRSC1  0D71  0D70
MRSC2  0D75  0D78
MRTER  0C82  0C4A
MRTE1  0C9F  0C92
MRTN   CA5B  0980 0A5A
MTBEG  08D3  0FFC
MTBSY  0DA0  0D92 0D98
MTDSW  0880  0823 0826 0827 0828 082A 082B 083B 083D 083E
MTEND  08CD  0808 08D1
MTFZ   0E1E  0DF2 0E13
MTF1   0E15  0E14
MTI    081A  085E
MTIAC  0873  0839
MTIAD  083B
MTIAE  0875  087C
MTIC   0836  0830
```

```
MTICL   086A  084A
MTIC1   084D  0843
MTIER   0896  0885 0886 0889 088A 088F 0890 0891 08A4 08A9
MTIE1   086E  086D
MTIR    0855  0851 0BE0
MTIR1   0851  0872 0874
MTIS    085A  0818 081C 0869
MTIT    0840  0866
MTIX1   0879  082C 0836 0863
MTIX2   087A  0838
MTIX3   087B  086C
MTIX4   087C  0873
MTIO    0819  09EF 09FF 0D9A
MTRED   09C8
MTREE   0D8D  09C9
MTRE1   0D8F  0DA2
MTRE2   0D9C
MTRLD   09C5
MTRLE   0DA4  09C6
MTRL1   0DAA
MTRL2   0DAE  0DA9
MTRST   08AC  0806 0807 08C8
MTTWO   0974  0847 0852 0905 0C80 0C94 0D4A
PATWD   0C8F  0C47 0C5B
PEND    0FFA  080F 0FE5
PID     07FF  08D5 0DB5
RAD     0801  0CBE
RDCKR   0AEC  0B2D
RDT     0988
RDTE    0AC8  0989
RDTI2   0AD8  0888
RDTXA   0AD3  0AE9
RDTXB   0AD4  0B28
RDTXC   0B48  0B41 0B67 0B68 0B69
RDTXD   0AD5  0B1D
RDTY0   0AD6  0B2F
RDTY4   09B6
RDTY6   09BC
RDT03   0B1C  0AEB
RDT04   0B54  0B51
RDT1    0ACE  0B37 0B55
RDT15   0B38  0B32
RDT16   0B41  0B48
RDT17   0B4D  0B5A 0B5B 0B6B
RDT18   0B5C  0B1F 0B3B
RDT19   0B10  0B08 0B1A 0B1B 0B62
RDT20   0B2D  0B29
RDT22   0B63  0B45
RDT29   0B15  0AE5
RDT30   0B07  0B25
RDT35   0AE6
RDT36   0AE7
RDT37   0B2E  0B06
RDT7A   0B57  0ADD 0B4D
RDT8A   0AD7  0AD0 0B01 0B04 0B2B 0C8C
RELDV   0132  0DAA
REQDV   0131  0D96
RID     0800  0CB8 0CBA
RTN     0955
RTN1    0972
RWD     0985
RWDE    0B79  0986
RWDIR   0B8A  088E
RWDI1   0B92  0B80 0B8E
RWDI2   0B8B  0B90
RWD04   0B7B
RWD08   0B93
SELSW   087E  08C2 09F6 0A0E 0A15
```



```
SETI0   0BE2  08E8
SETI1   0BE5  091B
SETI3   0BE3  0BE6
SETX0   0BCF  08E6
SETX1   0BD2  0919
SETX3   0BD0  0BD3
SETX4   0C1C  08CE 09EC 0BCF 03E2 0BFE 0C18 0C22
SETX5   0C24  09FD 0BD2 0BE5 0C09 0C1A 0C2A
SETX6   0905  0938
SPFNC   09C3  0860
SPIAB   089E  089C
SPINT   089A  0884
SPITB   08A1
SPRT1   0860  0846 0883
STAC    09CE
STACE   0D7E  09CF
STAC1   0D80  0D8B
STAC2   0D8A  0D82
STARE   09AC
START   012D  09AD
STIR    09CB
STIRE   0BD4  09CC
STIR0   0BDE  0BDB
STIR1   0BDC
STIR3   0BD9
STIR6   0BE0
STPSE   0BBD  0998
STPST   0997
STPS2   0BC7  0BC4
STPS6   0BCD  0BCC
SWC     087F  083C
SWO     0802  0A25 0A7E 0AED 0CA3 0CFE 0DED 0E0D
SW1     0803  0A3D
SW2     0804  09F2 0A09
SW3     0805
TAG01   0A47  0A38
TAG02   08A0  089B
TERM    080E  0B23 0D9B 0DAD 0DB1 0EE1
WRIAI   0A87
WRIX4   0AB0  0A7B
WRIX6   0AB1  0A9A
WRIX7   0AB2  0A95
WRTB    0A70  0AA8
WRTI    0A73  0887
WRTIA   0A7A
WRTIC   0A8B  0A93 0AAF
WRTID   0A8D  0A8A
WRTIE   0A99  0A7D
WRTIH   0AA0
WRTII   0AA9  0A9C 0AA2
WRTM    098B
WRTME   0A6B  098C
WRT01   0A94  0A81
WRT02   0A83  0A98
WRT03   0A86  0A96
WTM     098E
WTMAB   0AC3  088B
WTME    0ABE  098F
END OF ASSEMBLY
```

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TABLE OF CONTENTS

1. PURPOSE

THE PURPOSE OF THIS PROGRAM IS TO PREPARE THE 2315 CE DISK PACK FOR USE BY THE DISK DIAGNOSTIC TEST PROGRAM. THIS PROGRAM IS RUN NORMALLY AT INSTALLATION TIME, AND WHEN THE PACK DATA HAS BEEN DESTROYED OR CHANGED. IN THIS PROGRAM ALL FILE ADDRESSES AND THE PROPER SECTOR PATTERNS ARE WRITTEN. THE EXCEPTIONS ARE CYLINDERS 90-110 INCLUSIVE.

2. REQUIREMENTS

2.1 PROGRAM REQUIREMENTS

A. PROGRAM PREREQUISITES

THIS PROGRAM MUST RUN UNDER CONTROL OF THE DIAGNOSTIC MONITOR. THE DIAGNOSTIC MONITOR PROGRAM USES 2,047 STORAGE WORDS, AND THIS PROGRAM USES 2047 STORAGE WORDS.

B. THIS PROGRAM WILL RUN IN OVERLAP MODE, HOWEVER, TO INSURE A SUCCESSFUL (UNDER ALL CONDITIONS) INITIALIZATION PASS, DO NOT INITIALIZE IN THE OVERLAP MODE. THIS PROGRAM IS FOR THE 1800-1810 WITH EITHER THE 13 SD OR THE 44 SD FILE UNIT.

C. PROGRAM EDIT.

THIS PROGRAM REQUIRES TWO EDIT CARDS. IF ONLY ONE DISK STORAGE DRIVE IS ATTACHED TO THE SYSTEM, THEN THE INFORMATION FOR SAID DISK STORAGE DRIVE IS PLACED IN THE AREA ENTITLED FILE 1. FOR TWO DISK STORAGE DRIVES, FILL IN FILE 1 AND FILE 2 INFORMATION. THE THIRD DISK STORAGE DRIVE INFORMATION IS PLACED IN FILE 3. THE EIGHT AREAS DESIGNATED 'ALT ADDR FIELD' ARE USED ONLY WHEN ONE OR MORE OF THE ADDRESSES IN THE CE DISK PACK THAT ARE NORMALLY USED ARE NOT USABLE. ANY UNUSABLE ADDRESSES WILL APPEAR IN THE CYLINDER ERROR TABLE. ALL EIGHT ADDRESSES OF AN ERROR CYLINDER WILL BE RECORDED. THIS TABLE IS PRINTED OUT AT THE END OF THE PROGRAM, PROVIDED THERE HAVE BEEN ENTRIES. THE EIGHT ADDRESSES NORMALLY USED ARE - 0000, 0008, 0010, 0018, 0638, 0640, 0648, AND 0650. IF ADDRESS 0640 WAS NOT USABLE FOR SOME REASON, THEN 0640 COULD BE REPLACED WITH 0630. THEREFORE, 0630 WOULD BE PLACED IN THE SIXTH AREA SINCE 0640 IS THE SIXTH ADDRESS NORMALLY REFERENCED. NOW ALL REFERENCES TO 0640 WILL BE REFERENCED INSTEAD TO 0630.

NOTES

NOTE 1

ALL DISK STORAGE DRIVE ASSIGNMENTS (FILE 1, FILE 2, AND FILE 3) AND ALL THE NORMAL ADDRESSES PRIOR TO THE ADDRESS BEING CHANGED MUST ALSO BE PUNCHED INTO EDIT CARD NUMBER 0. WHEN DISK STORAGE DRIVES ARE NOT ATTACHED TO THE SYSTEM, FILL THEIR DESIGNATED AREAS WITH ZEROES. IN OUR EXAMPLE THEN, 0000-0008-0010-0018-0638 MUST ALSO BE PUNCHED PRIOR TO 0630.

NOTE 2

IF AN ADDRESS IS CHANGED, THE SAME EDIT INFORMATION IS REQUIRED BY THE 1810 FUNCTION TEST. THE ONLY DIFFERENCE WILL BE THE PID NUMBER.

2.2 EQUIPMENT REQUIREMENTS

2315 CE DISK PACK.

3.0 OPERATING PROCEDURE

3.1 PROGRAM LOADING

PLACE THE 2315 CE DISK PACK IN THE 1810 TO BE USED AND FOLLOW THE STEPS BELOW.

1) TURN POWER ON.
2) WAIT LONG ENOUGH FOR THE MACHINE TO BECOME READY. MACHINE MUST BE READY PRIOR TO EXECUTING PROGRAM.

STANDARD LOADING PROCEDURES AS DESCRIBED IN THE DIAGNOSTIC MONITOR USE PROCEDURE.

3.2 PROGRAM OPERATION

STANDARD MONITOR OPERATING PROCEDURES APPLY. THESE PROCEDURES ARE SUMMARIZED HERE. SEE DM USE PROCEDURES FOR DETAILS.

1. CLEAR STORAGE TO 70FF
2. LOAD DIAGNOSTIC MONITOR
3. SELECT MODE OF OPERATION
4. SELECT MONITOR CONTROL OPTIONS.
5. SELECT DRIVE TO BE RUN FROM TABLE 2.
6. INSTRUCT MONITOR TO EXECUTE THIS PROGRAM.
7. IF WAIT 30CE OCCURS, SELECT CONTROL AS PER TABLE 3. NOTE -- THIS WAIT LOOP IS A SAFETY LOOP TO PREVENT INITIALIZING A DIMAL PACK OR CUSTOMER PACK UNINTENTIONALLY. AN EW62/EW63 CAN OCCUR ON A VIRGIN PACK OR ON AN ERROR CONDITION. THE PROGRAM WILL THEN BRANCH TO THE 30CE WAIT. THEREFORE, CHECK PRINTOUTS BEFORE PRECEEDING. ANALYZE ERROR ADDRESSES, IF ERROR OCCURED, BEFORE PROCEEDING WITH INITIALIZATION.

TABLE 2 DEVICE SELECTION

THIS FUNCTION IS USED FOR SELECTING DEVICES FOR MULTIPLE DEVICE PROGRAMS. IF THE ENTRY FOR FUNCTION 2 IS EITHER 0000 OR 8000 THE FIRST FILE WILL BE EXECUTED.

SENSE/PROGRAM 0 1 2 3 4 5 6 7	1. SET FUNCTION 10 IN SENSE/PROGRAM SWITCHES 0 AND 1. 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. 3. SET DESIRED CONTROL OPTIONS IN DATA ENTRY SWITCHES 0-15. 4. PRESS CONSOLE INTERRUPT.
1 0 0 0 1 0 0 0	

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
0 0 0	FIRST FILE A1
1 0 0	FIRST FILE A1
0 1 0	SECOND FILE A2
0 0 1	THIRD FILE A3

TABLE 3 SPECIAL CONDITION CONTROL

THIS FUNCTION IS USED TO CONTROL THE OPERATION OF VARIOUS SPECIAL CONDITIONS OR FUNCTIONS.

SENSE/PROGRAM 0 1 2 3 4 5 6 7	1. SET FUNCTION 11 IN SENSE/PROGRAM SWITCHES 0 AND 1 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. 3. SET DESIRED CONTROL OPTIONS IN DATA SWITCHES 0 TO 15. 4. PRESS CONSOLE INTERRUPT.
1 1 0 0 1 0 0 0	

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
1	CE RECOGNIZES THAT DISK PACK IS EITHER A DIMAL, VIRGIN, OR CUSTOMER PACK AND IT IS TO BE INITIALIZED.
. . . . . 1 .	BYPASS ARM TO HOME (DCARM RT) BETWEEN RTNS.
. 1	SEMI-AUTO I/O AREA SCAN. DISPLAYS ONE WORD IN THE ACCUMULATOR EACH TIME THE START KEY IS PRESSED AFTER EW06 MESSAGE. THE WORD COUNT IS DISPLAYED ON THE FIRST WAIT. (30DA) SCAN RT EXITS AFTER I/O WORD 321 OR FNC BIT 15 + CONSOLE INTERRUPT IS PRESSED. (NOTE ...BIT 15 IS A NON OVERLAP FNC)

3.3 PROGRAM HALTS

THIS PROGRAM HAS ONE HANGUP WAIT 70FF. THIS OCCURS ON A DOUBLE OR NON SCHEDULED INTERRUPT ON THIS LEVEL AND ILSW BIT. SEE BEGINNING OF LISTING FOR LOCATION AND DETAILS.

THE FOLLOWING WAITS MAY OCCUR.

ADDR LABEL	WAIT NUMBER	DESCRIPTION
WAIT1	30CE	THIS IS A SAFETY WAIT TO NOTIFY THE CE THAT THIS IS A DIMAL, CUSTOMER OR VIRGIN PACK. SEE 3.2-7.
WAIT2	30ED	THIS WAIT SIGNIFIES THE END OF THE PROGRAM. TO RETURN TO THE MONITOR -- PRESS RESET + START. THE WAIT IS NECESSARY FOR A DIMAL PACK TO PREVENT THE PROGRAM FROM RETURNING TO THE DISK VIA THE MONITOR LOAD TO LOOK FOR THE PROGRAM CONTROL.

3.4 PROGRAM TERMINATION

THE PROGRAM WILL AUTOMATICALLY TERMINATE AFTER ONE PASS. AN A001 MESSAGE FOLLOWED BY AN AEOD WILL INDICATE PROGRAM TERMINATION.

NOTE

IF THE PROGRAM IS NOT ALLOWED TO MAKE A NORMAL TERMINATION, THE DISK PACK WILL NOT BE ACCEPTED BY THE 1810 PROGRAM.

4. PRINTOUTS

4.1 STATUS MESSAGES

PID MID RID RAD

0800 A001 0017 XXXX PPC TSC RSC
TWC SWE HWE
TRC SRE HRE
COMPLETE PASS OF PROGRAM AND STATISTICAL INFORMATION.

08000 A004 000N XXXX
THIS MESSAGE IS ALWAYS PRECEEDED BY TWO EW08 MESSAGES. THE TWO EW08 MESSAGES INDICATE THAT THE WRONG ADDRESS WAS READ TWICE AFTER THE INITIAL SEEK. HOWEVER, REZEROING THE ARM AND RESEEKING THE PROPER ADDRESS WAS OBTAINED. THE PROGRAM COUNTS THIS AS ONE SEEK ERROR.

0800 AEOD 000N XXXX
END OF DISK DIAGNOSTIC. AN 'AEOD' FOLLOWING AN 'A001' EQUALS NORMAL PROGRAM TERMINATION. AN 'AEOD' FOLLOWING AN 'E403' INDICATES THAT THE ACCESS ARM DID NOT GO TO HOME DURING INITIALIZATION OF PROGRAM.

0800 AODC 000N XXXX
THIS MESSAGE IS ACCOMPANIED WITH A 30CE WAIT. IT IS TO INFORM THE CE OF THE 30CE INITIALIZATION WAIT CONDITIONS. SEE SECTION 3.2.7 FOR DETAILS. NOTE THE TABLE 3 DESCRIPTION.

0800 CBAD 000N XXXX ADR0 ADR1 ADR2 ADR3 ADR4 ADR5 ADR6 ADR7
THIS IS THE CYLINDER ERROR TABLE (CET) PRINTOUT. THE ADDRESSES HERE ARE IN ERROR. ONE BAD SID (SECTOR ID) WILL CAUSE ALL EIGHT ADDRESSES FOR SAID CYLINDER TO BE INCLUDED IN CET. FOUR LINES OF CET OUTPUT EQUAL A BAD PACK. (SEE EW66) ADR0 TO ADR7 ARE THE BAD ADDRESSES (SECTORS 0-7) OF SAID CYLINDER. SEE COMMENTS.

4.2 ERROR MESSAGES

```
*****************************************************************************
*          THE MESSAGE IDENTIFICATION WORD ( MID ) FOR ERROR PRINTOUTS IS OF *
*          THE FORM EWNN, WHERE,                                            *
*                                                                           *
*          E = ERROR MESSAGE IDENTIFIER                                     *
*          W = VARIABLE DIGIT DEFINING THE XIO FUNCTION CODE AS FOLLOWS,    *
*                                                                           *
*              0 = NO XIO FUNCTION ASSOCIATED WITH ERROR MESSAGE, OR TEST   *
*                  MESSAGE.                                                 *
*              4 = CONTROL FUNCTION (SEEK)                                  *
*              5 = INITIALIZE WRITE FUNCTION                                *
*              6 = INITIALIZE READ FUNCTION                                 *
*              7 = SENSE DEVICE FUNCTION                                    *
*                                                                           *
*          NN = MESSAGE NUMBER                                              *
*                                                                           *
*****************************************************************************
```

PID MID RID RAD MOD1 MOD2 MOD3 MOD4 MOD5

0800 EW01 000N XXXX DSW LGA DDA AAR SCI
INTERRUPT WAS LOST. PROGRAM AUTOMATICALLY RETRIES TO EXECUTE ROUTINE.

0800 EW02 000N XXXX DSW
FILE NOT READY, BUSY, OP COMPLETE OR ANY ERROR IS ON.

0800 EW03 000N XXXX DSW
DSW HOME BIT NOT ON OR ARM DID NOT RETURN TO HOME WITH A ZERO ADDRESS FOR A 44 SD OR 204 INCR FOR A 13 SD. DSW SHOULD BE 080X WHERE X = 4 TO 7 FOR A 44 SD AND X = 0 TO 3 FOR A 13 SD FILE UNIT.

0800 EW04 000N XXXX DSW LGA DDA AAR SCI
DESIRED ADDRESS IS IN THE TABLE OF BAD ADDRESSES. ROUTINE TERMINATED. NEXT ROUTINE IS TRIED.

0800 EW05 000N XXXX DSW
DSW HAS BIT/BITS ON THAT SHOULD NOT BE ON AT THIS TIME. BRANCH TO MONITOR END ROUTINE.

0800 EW06 000N XXXX DSW LGA DDA AAR SCI
DSW ERROR BIT/BITS ON AFTER A READ OR WRITE.

0800 EW07 000N XXXX DSW
HARD READ OR WRITE ERROR. INDICATES TEN SOFT READ/WRITE RETRIES WITH FAILURE STILL PRESENT. DSW INDICATES ERROR BITS. EW06 MESSAGES WILL PRECEED THIS ERROR MESSAGE.

0800 EW08 000N XXXX DSW LGA DDA AAR SCI
ACTUAL ADDRESS READ AND THE DESIRED ADDRESS DO NOT AGREE. (RD, RD-CK FUNCTION ONLY) FIRST EW08 WILL CAUSE A RE-READ OF THE DESIRED ADDRESS. SECOND EW08 WILL CAUSE A RE-ZERO OF THE ACCESS ARM AND A RE-SEEK AND A READ OF THE DESIRED ADDRESS.

0800 EW09 000N XXXX DSW LGA DDA AAR SCI
THIS MESSAGE WILL ALWAYS BE PRECEEDED BY TWO EW08 MESSAGES. THE ACTUAL AND THE DESIRED ADDRESSES STILL DO NOT AGREE. (SEE EW08 MESSAGE.) THE ACTUAL ADDRESSES OF THE TWO EW08 MESSAGES ARE THE SAME. THEREFORE, A SEEK ERROR MOST LIKELY OCCURED. HOWEVER, THERE IS STILL A POSSIBILITY OF A READ, WRITE, OR DISK PACK RECORDED DATA ERROR OR ERRORS.

0800 EW0A 000R XXXX DSW
DSW HOME BIT NOT ON OR ARM DID NOT RETURN TO HOME WITH A ZERO ADDRESS RESTORE ACCESS OPERATION. DSW SHOULD BE 080X WHERE X = 4 TO 7 FOR A 44 SD AND X = 0 TO 3 FOR A 13 SD FILE UNIT.

0800 EW15 000N XXXX DSW LGA DDA AAR SCI
THIS MESSAGE WILL ALWAYS BE PRECEEDED BY TWO EW08 MESSAGES. THE ACTUAL AND THE DESIRED ADDRESSES STILL DO NOT AGREE. (SEE EW08 MESSAGE.) THE ACTUAL ADDRESSES OF THE TWO EW08 MESSAGES ARE NOT THE SAME. THEREFORE, A READ ERROR MOST LIKELY OCCURED. HOWEVER, THERE IS STILL A POSSIBILITY OF A SEEK, WRITE, OR DISK PACK RECORDED DATA ERROR OR ERRORS.

0800 EW20 0002 XXXX DSW LGA DDA AAR SCI
WRONG ADDRESS READ, DESIRED AND ACTUAL DO NOT AGREE. THIS IS A SECTOR ERROR.

0800 EW21 0002 XXXX DSW LGA DDA AAR SCI
READ SUBROUTINE ERROR RETURN. DSW, ADDRESS OR DATA MAY BE IN ERROR. CHECK PRINTOUT CAREFULLY.

0800 EW40 000R XXXX DSW
DSW ERROR BITS ON AFTER A SEEK OPERATION. PROGRAM CONTINUES. DSW SHOULD BE 4YOX WHERE Y CONTAINS A 0 OR 8 AND X EQUALS 4 TO 7 FOR A 44 SD AND X EQUALS 0 TO 3 FOR A 13 SD FILE UNIT.

0800 EW41 000R XXXX DSW LGA DDA AAR SCI
DSW ERROR BITS INDICATES A SEEK INVALID ADDRESS ERROR. CHECK PROGRAM FOR PROPER ADDRESS. PROGRAM BRANCHES TO MONITOR END.

0800 EW42 000R XXXX DSW
DSW ERROR BITS INDICATES A SEEK INCOMPLETE ERROR. CHECK FILE SEEK CIRCUITS. PROGRAM BRANCHES TO RESTORE ARM AND THEN EXITS TO MONITOR END.

0800 EW60 0001 XXXX DSW LGA DDA AAR SCI
WRITE ERROR RETURN. THIS OCCURS IN ROUTINE NO. 01, WHICH

PLACES THE PROPER PATTERN ON THE DISK.

0800 EW61 0001 XXXX DSW LGA DDA AAR SCI
READ ERROR RETURN. THIS OCCURS IN ROUTINE NO. 01, WHICH PLACES THE PROPER PATTERN ON THE DISK.

0800 EW62 000N XXXX DSW LGA DDA AAR SCI
ERROR OCCURED ON READING SECTOR 0 OF CE TRACK. THIS READ TESTS FOR A DIMAL PACK. PROGRAM TRIED TWO TIMES TO READ THIS SECTOR. CE MAY PROCEED AFTER CHECKING PRINTOUTS (SEE 3.2-7) AS THE PROGRAM WILL BRANCH TO THE 30CE WAIT FOR INITIALIZATION CONTROL. RE-READ IS VIA A RE-SEEK OPERATION. ADDRESS DESIRED + ACTUAL DO NOT AGREE.

0800 EW63 000N XXXX DSW LGA DDA AAR SCI
ERROR OCCURED ON READING SECTOR 7 OF CE TRACK. THIS READ TESTS FOR A CE PACK. PROGRAM TRIED TWO TIMES TO READ THIS SECTOR. CE MAY PROCEED AFTER CHECKING PRINTOUTS (SEE 3.2-7) AS THE PROGRAM WILL BRANCH TO THE 30CE WAIT FOR INITIALIZATION CONTROL. RE-READ IS VIA A RE-SEEK OPERATION. ADDRESS DESIRED + ACTUAL DO NOT AGREE.

0800 EW66 0002 XXXX DSW LGA DDA AAR SCI
FOUR OR MORE CYLINDERS HAVE BAD SECTORS. THIS PACK IS THEREFORE BAD, ACCORDING TO THE DESIGN SPECIFICATIONS. DOES NOT CONTAIN 200 GOOD CYLINDERS.

0800 E077 0003 XXXX
WHEN THIS MESSAGE FOLLOWS AN 'E004' IT INDICATES THAT THE DESIGNATED 'CE' CYLINDER (199) ADDRESS 0638 IS BAD. IT WILL BE NECESSARY TO RE-EDIT THE PROGRAM. CHANGE ADDRESS NUMBER 5 (0638) TO SOME OTHER UNUSED ADDRESS. SUGGESTED ALTERNATE ADDRESS IS 0630 (CYLINDER 198).

0800 EWCE 0002 XXXX DSW LGA DDA AAR SCI
ERROR IN WRITING CE DISK SECTORS 3 AND 7. THESE SECTORS CONTAIN SECTOR ID, 'CEDC' ID WORD, NUMBER OF ERROR SECTORS, SECTOR ADDRESS ERROR TABLE, AND THE STANDARD PATTERN.

4.3 SYMBOL MEANINGS

AAR - ACTUAL ADDRESS READ
AWP - ACTUAL WORD PATTERN (WORD PATTERN READ)
DDA - DESIRED DISK ADDRESS (THE ADDRESS THE OPERATION REQUIRES)
DSW - DISK STATUS WORD
EWP - EXPECTED WORD PATTERN
HRE - HARD READ ERROR (TOTAL)
RSC - RE-SEEK COUNT (TOTAL)
HWE - HARD WRITE ERROR (TOTAL)
LGA - LAST GOOD ADDRESS READ
PPC - PROGRAM PASS COUNT
SCI - SEEK CYLINDER INTERVAL (MEASURED FROM HOME)
SRE - SOFT READ ERROR (TOTAL)
SWE - SOFT WRITE ERROR (TOTAL)
TRC - TOTAL READ COUNT
TSC - TOTAL SEEK COUNT
TWC - TOTAL WRITE COUNT
WEC - WORD ERROR COUNT (THE NUMBER OF THE WORD IN THE RECORD THAT IS IN ERROR)
000N - ANY OF SEVERAL ROUTINE NUMBERS
ADR0 - CYLINDER X -- SECTOR 0 ADDRESS.
ADR1 - CYLINDER X -- SECTOR 1 ADDRESS.
ADR2 - CYLINDER X -- SECTOR 2 ADDRESS.
ADR3 - CYLINDER X -- SECTOR 3 ADDRESS.
ADR4 - CYLINDER X -- SECTOR 4 ADDRESS.
ADR5 - CYLINDER X -- SECTOR 5 ADDRESS.
ADR6 - CYLINDER X -- SECTOR 6 ADDRESS.
ADR7 - CYLINDER X -- SECTOR 7 ADDRESS.
XXXX - UNKNOWN ADDRESS (RELOCATABLE)

5. COMMENTS

5.1 DISK ADDRESSING SCHEME

THE FOLLOWING IS THE FORMAT FOR THE DISK ADDRESSING SCHEME --

HEX WD	N	N	N	N
BITS	0 1 2 3	4 5 6 7	8 9 10 11	12 13 14 15
CODE	X X X X	X C C C	C C C C	C H S S
CYL. POS CNT		1 0 0	0 0 0 0	0
READ		2 6 3	1 0 0 0	0
DOWN		8 4 2	6 8 4 2	1

C = CYLINDER H = HEAD S = SECTOR X = NOT USED

THE LOWEST CYLINDER ADDRESS IN HEX = 0000
THE HIGHEST CYLINDER ADDRESS IN HEX = 0657
THE ADDRESSES ARE CYLINDER 0, HEAD 0, SECTOR 0 TO CYLINDER 202, HEAD 1, SECTOR 3.

THE ABOVE ADDRESSING FORMAT IS USED FOR ALL THE SECTOR IDENTIFICATION WORD. (CALLED SID) IT APPEARS ON THE DISK AND AS THE FIRST WORD OF DATA TO BE READ OR WRITTEN TO OR FROM CORE. IT IS THE SECOND WORD OF THE FIELD ADDRESSED BY THE IOCC. (THE FIRST WORD OF SAID FIELD IS THE WORD COUNT) IT APPEARS IN THE MESSAGE PRINTOUTS IN MODIFIER POSITIONS TWO THRU FOUR. (THESE ARE THE DISK ADDRESSES)

A. TO CONVERT HEX DISK ADDRESS WORD TO DECIMAL. PERFORM THE FOLLOWING

1. FIND CORRESPONDING C.V. FOR EACH N IN THE ADDRESS.
2. ADD THE C.V.'S TOGETHER.
3. C.V. TOTAL IS THE ACTUAL CYLINDER NUMBER IN DECIMAL.
4. FIND CORRESPONDING S.N. FOR UNITS N OF HEX ADDRESS.
5. S.N. IS THE ACTUAL DECIMAL HEAD - SECTOR NUMBER.

EXAMPLE --

CONVERT 03BD TO DECIMAL CYLINDER AND SECTOR NUMBERS.

SOLUTION -- FROM TABLE

0 3 B D	C.V.	S.N.	
	1	5	
	22		
	96		
CYLINDER	119	5	SECTOR

B. TABLE 3. HEX ADDRESS CONVERSION

DISK ADDRESS WORD IN HEX

. . 0 N N N

ZERO NOT USED . . . . . .

C.V. = CYLINDER VALUE

S.N. = SECTOR NUMBER

NNN = HEX ADDRESS FROM 000 TO 657

N . C.V.	N . C.V.	N . C.V. + S.N.
0 = 00	0 = 0	0 = 0 + 0
	1 = 2	1 = 0 + 1
1 = 32	2 = 4	2 = 0 + 2
	3 = 6	3 = 0 + 3
2 = 64	4 = 8	4 = 0 + 4
	5 = 10	5 = 0 + 5
3 = 96	6 = 12	6 = 0 + 6
	7 = 14	7 = 0 + 7
4 = 128	8 = 16	8 = 1 + 0
	9 = 18	9 = 1 + 1
5 = 160	A = 20	A = 1 + 2
	B = 22	B = 1 + 3
6 = 192	C = 24	C = 1 + 4
	D = 26	D = 1 + 5
	E = 28	E = 1 + 6
	F = 30	F = 1 + 7

5.2 ROUTINES

IT IS THE INTENT OF THIS SECTION TO DESCRIBE THE FUNCTIONS OF EACH TEST ROUTINE AND THE DISK SUPERVISOR ROUTINES. THE FOLLOWING ARE THE IMPORTANT DISK SUPERVISOR ROUTINES-

PROGRAM LISTING LABEL	FUNCTION
DCARM	RETURN ARM TO HOME
DEXEQ	SETUP AND EXECUTE THE IOCC.
DCABP	BYPASS CYLINDERS 90 THRU 110.
DCRDY	FILE READY, NOT BUSY AND NO ERRORS.
DCDSW	SENSE DSW AND SAVE IT.
DCRTN	ROUTINE NUMBER AND PROGRAM CONTROL ROUTINE.
DCSK	SEEK SUBROUTINE.
DCWR	WRITE SUBROUTINE.
DCRD	READ SUBROUTINE.
CDTRT	COMMON DATA TRANSFER ROUTINE.
NTRPT	INTERRUPT ROUTINE.
START	MONITOR CONTROL RETURN.
END	MONITOR END ENTRY.

THE DISK SUPERVISOR ROUTINES ARE THE INTERFACE BETWEEN THE DIAGNOSTIC MONITOR AND THE TEST ROUTINES. THESE ROUTINES DO THE BASIC TESTING, CHECKING AND CONTROLLING FOR THE USING ROUTINES WHICH MAY INCLUDE OTHER SUPERVISOR ROUTINES AS WELL AS TEST ROUTINES. THEREFORE, THE ERROR MESSAGES OF SUPERVISOR ROUTINES POINT TO BASIC OR GENERAL PROBLEMS AND SHOULD NOT BE DISREGARDED OR NOTICED CASUALLY. IN SHORT, ALL ERROR MESSAGES SHOULD BE CAREFULLY ANALYZED TO SEE HOW THEY RELATE TO EACH OTHER.

NOTE

AN UNSCHEDULED INTERRUPT WILL CAUSE A PROGRAM HANG CONDITION. SEE THE INTERRUPT ROUTINE.

AGAIN IT MUST BE SAID, 'ALL ERROR MESSAGES MUST BE ANALYZED TO FIND THEIR ASSOCIATION WITH EACH OTHER.'

ROUTINE 01 WRITE SECTOR IDENTIFICATION ON CYLINDERS 000 (0000) THRU 089 (02C8) AND 111 (0378) THRU 202 (0650) WRITES ALTERNATE WORST CASE PATTERNS ON ALL CYLINDERS AND USES 2 SECTORS TO LOG ALL CYLINDERS THAT ARE BAD. THE CYLINDER ERROR TABLE (C.E.T.)IS LOCATED ON SECTOR ID 063B AND 063F.

ROUTINE 02 VERIFIES CORRECT ADDRESSES ON ALL CYLINDERS (EXCEPT 90 - 110 INCLUSIVE). THIS IS A REVERSE READ. STARTS AT CYLINDER 202 AND READS TO HOME ADDRESS 0000 (HEX).

NOTE

ANY ERROR TYPEOUTS DURING ROUTINE 2 WILL CAUSE THE INITIALIZATION PROGRAM TO BE RESTARTED. THESE TYPEOUTS COULD INDICATE IMPROPER SEEK AND WRITING OF THE SECTOR ADDRESS, THEREFORE TO ENSURE PROPER INITIALIZATION THE PROGRAM IS AUTOMATICALLY RESTARTED. IF ERROR MESSAGES WITH ROUTINE 2 DESIGNATED KEEP REOCCURRING, THIS INDICATES IMPROPER SEEK INCREMENTING FROM CYLINDER 0 TO 202. INVESTIGATE SEEK ERRORS BEFORE TRYING TO INITIALIZE THE PACK.

ROUTINE 03 WRITES THE CE SECTORS WHICH CONTAIN THE CYLINDER ERROR TABLE DATA. THE CE SECTORS ARE IDENTIFIED BY THE WORD ' CEDC ' FOLLOWING THE SECTOR ID. 1313 ON SECTORS 0,2,5, AND 7. E5E5 ON SECTORS 1,3,4, AND 6. THE C.E.T. IS PRINTED AT THE END OF THE PROGRAM IF THERE ARE ENTRIES IN IT. CE SECTORS ARE 3 AND 7.

NOTE

IF AN ERROR OCCURS DURING THIS ROUTINE THAT INDICATES IMPROPER CE DATA SECTOR, AN ALTERNATE SHOULD BE SELECTED VIA EDIT CARDS.

LAST PAGE

6 APPENDIX

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.

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).

COLUMNS	FIELD
1	
2-5	PROGRAM ID
6	(shaded)
7-10	CARD SEQUENCE NUMBER
11	(shaded)
12-15	NUMBER OF EDIT ENTRIES (1-B)
16	(shaded)
17-20	DRIVE 1 DDEF ENTRY 1: INTERRUPT LEVEL (HEX), ILSW BIT (HEX), CHANNEL (OR F)
21	(shaded)
22-25	DRIVE 2 DDEF ENTRY 2: INTERRUPT LEVEL (HEX), ILSW BIT (HEX), CHANNEL (OR F)
26	(shaded)
27-30	DRIVE 3 DDEF ENTRY 3: INTERRUPT LEVEL (HEX), ILSW BIT (HEX), CHANNEL (OR F)
31	(shaded)
32-35	ALTERNATE FILE ADDRESSES — ENTRY 4: ADDRESS REFERENCE 1 ** 0000
36	(shaded)
37-40	ENTRY 5: ADDRESS REFERENCE 2 ** 0008
41	(shaded)
42-45	ENTRY 6: ADDRESS REFERENCE 3 ** 0010
46	(shaded)
47-50	ENTRY 7: ADDRESS REFERENCE 4 ** 0018
51	(shaded)
52-55	ENTRY 8: ADDRESS REFERENCE 5 ** 0638
56	(shaded)
57-60	ENTRY 9: ADDRESS REFERENCE 6 ** 0640
61	(shaded)
62-65	ENTRY A: ADDRESS REFERENCE 7 ** 0648
66	(shaded)
67-70	ENTRY B: ADDRESS REFERENCE 8 ** 0650
71	(shaded)
72-75	

COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16-75
CARD 0	E	0	8	0	0		E	D	0	0		0	0	0		
END	E	0	8	0	0		F	F	F	F						

CARD 0 CONTAINS THE DDEF'S FOR THE 2310 DRIVES. REFER TO NOTE AT BOTTOM OF PAGE.

CARD END IS THE "END EDIT CARD". PUNCH EXACTLY AS IS SHOWN.

** ADDRESSES THAT ARE NORMALLY USED. THESE ADDRESSES NEED NOT BE PUNCHED UNLESS AN ADDRESS IS BEING CHANGED. THEN, ALL ADDRESSES TO THE LEFT OF SAID CHANGE MUST BE PUNCHED, AND THE TOTAL NUMBER OF ALL ENTRIES INDICATED (COL. 15). IF SYSTEM HAS A1 OR A2 FILE, THE UNUSED DRIVE FIELDS MUST BE PUNCHED 0000 ONLY WHENEVER AN ADDRESS REFERENCE FIELD IS PUNCHED. (OTHERWISE LEAVE UNUSED DRIVE FIELDS BLANK.) SEE SEC. 2.2.1.B

DATE	28FEB66	01JUL66	04NOV66	01OCT67	02DEC68
EC	415120	415178	415233	411875	411961

```
3001                    ORG     *&/3001                                 80800020
                      *                                                 80800030
                      *.....................................*           80800040
                      *                                     *           80800050
                      *             1800-1810 FILE DIAGNOSTIC*          80800060
                      *             TEST.  PROGRAM RELOCATED *          80800070
                      *             AT 2047 OR HIGHER.       *          80800080
                      *             TWO  EDIT CARDS REQUIRED.*          80800090
                      *             SEE WRITEUP FOR DETAILS. *          80800100
                      *                                     *           80800110
                      *.....................................*           80800120
                      *                                                 80800130
                      *                                                 80800140
                      *       *****   PROGRAM CONTROL   *****           80800150
                      *       *****   CONDITION WAITS   *****           80800160
                      *                                                 80800170
                      *                                                 80800180
3001 1 089C           *       DC      WAIT1     CE WAIT NUMBER 1        80800190
                      *                                                 80800200
                      *                                                 80800210
                      *             WAIT1 -- IS TO LET THE              80800220
                      *             CE KNOW THAT A DIMAL,               80800230
                      *             CUSTOMER, OR VIRGIN PACK            80800240
                      *             IS TO BE INITIALIZED.               80800250
                      *             THIS WAIT ALLOWS THE CE TO          80800260
                      *             MAKE THE DECISION WHETHER           80800270
                      *             THIS PACK IS OR IS NOT TO           80800280
                      *             BE INITIALIZED.                     80800290
                      *                                                 80800300
                      *                                                 80800310
3002 1 08BF           *       DC      WAIT2     END OF INIT PGM         80800320
                      *                                                 80800330
                      *                                                 80800340
                      *             WAIT2 -- INDICATES THAT             80800350
                      *             THE END OF THE INITIAL-             80800360
                      *             IZATION PROGRAM HAS BEEN            80800370
                      *             REACHED.   NOTE -- IF THIS          80800380
                      *             PROGRAM WAS LOADED FROM             80800390
                      *             THE DISK VIA DIMAL, DO NOT          80800400
                      *             TRY TO PROCEED WITHOUT RE-          80800410
                      *             LOADING DISK DIMAL PGMS.            80800420
                      *             TO RECOVER FROM THIS WAIT,          80800430
                      *             PRESS STOP-RESET-START IN           80800440
                      *             THAT ORDER.  THIS WILL RE-          80800450
                      *             TURN CONTROL TO THE                 80800460
                      *             MONITOR.                            80800470
                      *                                                 80800480
                      *                                                 80800490
7001                  *       ORG     *&/3FFE                           80800500
                      *                                                 80800510
                      *                                                 80800520
                      *       *****   ERROR TRAP 01     *****           80800530
                      *       *****   PROGRAM HANGUP    *****           80800540
                      *                                                 80800550
                      *                                                 80800560
                      *                                                 80800570
7001 1 08F0           *       DC      NTRER     INTERRUPT ERROR TRAP    80800580
                      *                                                 80800590
                      *                                                 80800600
                      *             ALL SCHEDULED INTERRUPTS            80800610
                      *             SET A TRANSFER VECTOR IN            80800620
                      *             THE INTERRUPT ROUTINE.              80800630
                      *             IF SAID VECTOR WORD IS              80800640
                      *             BLANK, THE HANGUP WILL              80800650
                      *             OCCUR.    THE CAUSE MAY BE          80800660
                      *             ONE OF TWO CONDITIONS.              80800670
                      *             1-- AN UNSCHEDULED INTER-           80800680
                      *                 RUPT ON THIS LEVEL WITH         80800690
                      *                 THIS ILSW BIT, OR  2--          80800700
                      *                 A DOUBLE OR NON-RESETABLE       80800710
                      *                 INTERRUPT.      CONDITION       80800720
                      *                 TWO WILL BE INDICATED BY        80800730
                      *                 HAVING INTERRUPT LEVEL BIT      80800740
                      *                 STILL ON IN THE CONSOLE         80800750
                      *                 LITES.   THE TRANSFER           80800760
                      *                 VECTOR IS ZEROED AFTER THE      80800770
                      *                 ADDRESS IS SET IN THE           80800780
                      *                 MLSCF TABLE.                    80800790
                      *                                                 80800800
                      *                                                 80800810
07FF                  *       ORG     *-/6803                           80800820
                      *                                                 80800830
                      *                                                 80800840
                      *.....................................*           80800850
                      *             EQUATE TABLE FOR MONITOR *          80800860
                      *.....................................*           80800870
                      *                                     *           80800880
012C                  BEGIN EQU     300                                 80800890
012D                  START EQU     BEGIN&1                             80800900
012E                  END   EQU     START&1                             80800910
012F                  LOG   EQU     END&1                               80800920
0130                  ERROR EQU     LOG&1                               80800930
0131                  REQDV EQU     ERROR&1                             80800940
0132                  RELDV EQU     REQDV&1                             80800950
0133                  HALT  EQU     RELDV&1                             80800960
                      *                                     *           80800970
                      *.....................................*           80800980
                      *             PROGRAM START TABLE     *           80800990
                      *.....................................*           80801000
                      *                                     *           80801010
07FF 0 0C00           PID   DC      /0C00     PROGRAM ID                80801020
0800 0 0000           RID   DC      0         ROUTINE ID                80801030
0801 0 0000           RAD   DC      0         ROUTINE ADDR              80801040
0802 0 0000           SW0   DC      0         FUNCTION 00               80801050
0803 0 0000           SW1   DC      0                  01               80801060
0804 0 0000           SW2   DC      0                  10               80801070
0805 0 0000           SW3   DC      0                  11               80801080
                      *                                     *           80801090
                      *.....................................*           80801100
                      *             MAINLINE SEQ CTRL FLD   *           80801110
                      *.....................................*           80801120
                      *                                     *           80801130
0806 1 0821           IPA   DC      DIPA      INIT PROG ADDR            80801140
0807 1 084C           LPA   DC      DLPA      LOOP PROG ADDR            80801150
0808 1 0853           EPA   DC      DEPA      END  PROG ADDR            80801160
0809 0 0000           LIV   DC      0         LOST NTRPT RT ENTRY       80801170
080A 0 0000           XNR   DC      0                                   80801180
080B 0 0000           MLN   DC      0         MAIN LINE ENTRY           80801190
080C 0 FFFF           TERM  DC      /FFFF     TERMINATOR                80801200
080D 1 0FF8           PEND  DC      OMEGA     LAST WORD OF PROG         80801210
080E 0 0000                 DC      0                                   80801220
080F 0 0000                 DC      0                                   80801230
0810 0 0000                 DC      0                                   80801240
0811 0 0000                 DC      0                                   80801250
0812 0 0000                 DC      0                                   80801260
                      *                                     *           80801270
                      *.....................................*           80801280
                      *             EDIT DATA & ADDR TBL    *           80801290
                      *.....................................*           80801300
                      *                                     *           80801310
0813 0 0000           EDTA1 DC      0         A1 DISK DEFINE FLD        80801320
0814 0 0000           EDTA2 DC      0         A2 DISK DEFINE FLD        80801330
0815 0 0000           EDTA3 DC      0         A3 DISK DEFINE FLD        80801340
                      *                                               80801350
0816 0 0000           DSKA0 DC      /0000     000 DISK CYL ADDR         80801360
                                                                        80801370
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0817 0 0008          DSKA1 DC     /0008     001 DISK CYL ADDR              80801380
0818 0 0010          DSKA2 DC     /0010     002 DISK CYL ADDR              80801390
0819 0 0018          DSKA3 DC     /0018     003 DISK CYL ADDR              80801400
081A 0 0638          DSKA4 DC     /0638     199 DISK CYL ADDR CE           80801410
081B 0 0640          DSKA5 DC     /0640     200 DISK CYL ADDR              80801420
081C 0 0648          DSKA6 DC     /0648     201 DISK CYL ADDR              80801430
081D 0 0650          DSKA7 DC     /0650     202 DISK CYL ADDR              80801440
                     *                                                    80801450
                     *.....................................*          80801460
                     *                BEGIN ROUTINE        *          80801470
                     *.....................................*          80801480
                     *                                     *          80801490
081E 0 4480 012C     EXEQD BSI  I BEGIN     BR TO MONITOR          XM     80801500
0820 1 07FF                DC   PID       PROG ID ADDR                   80801510
                     *                                     *          80801520
                     *.....................................*          80801530
                     *           INITIAL PROG ROUTINE      *          80801540
                     *.....................................*          80801550
                     *                                     *          80801560
0821 0 0000          DIPA  DC     0         ENTRY                        80801570
0822 1 6700 0B88           LDX  L3 DCT       SET X3 ADDR CTRL       SE    80801580
                     *                                                  80801590
0824 0 C0DF                LD     SW2       GET SW2 FUNCTION             80801600
0825 1 4C08 0830           BSC  L UNTA1,&    BR IF DISK UNIT A1           80801610
0827 0 1001                SLA    1          SHIFT B1 TO B3               80801620
0828 1 4C28 082D           BSC  L UNTA2,Z&   BR IF DISK UNIT A2           80801630
082A 1 6600 0815     UNTA3 LDX  L2 EDTA3     GET UNIT A3 ADDR             80801640
082C 0 7005                MDX    UNTA1&2    BR TO SET ADDRS              80801650
                     *                                                  80801660
082D 1 6600 0814     UNTA2 LDX  L2 EDTA2     GET UNIT A2 ADDR             80801670
082F 0 7002                MDX    UNTA1&2    BR TO SET ADDRS              80801680
                     *                                                  80801690
0830 1 6600 0813     UNTA1 LDX  L2 EDTA1     GET UNIT A1 ADDR             80801700
0832 1 6E00 0AE2           STX  L2 CHNSA     SET ADDR IN REQ RT           80801710
0834 1 6E00 0AF3           STX  L2 CHNRA     SET ADDR IN REL RT           80801720
                     *                                                  80801730
0836 0 438A                BSI    3 -118     BR TO REQUEST RT       SC    80801740
                     *                                                  80801750
0837 1 C400 08DD           LD   L  DVA       GET AREA CODE                80801760
0839 0 D305                STO    3 5        SET AREA CODE IN DCT         80801770
083A 0 C3C9                LD     3 -55      GET BASIC INST               80801780
083B 0 EB05                OR     3 5        OR IN AREA CODE              80801790
083C 0 D3BD                STO    3 -67      SET IN ADJ INST              80801800
083D 0 EBFF                OR     3 -1       MODIFY INST                  80801810
083E 0 D3BB                STO    3 -69      SET IN NEW INST              80801820
                     *                                                  80801830
083F 0 438E                BSI    3 -114     BR TO RELEASE RT       SC    80801840
                     *                                                  80801850
0840 0 C3B4                LD     3 -76      GET ML ENTRY                 80801860
0841 0 D0C9                STO      MLN      SET IT IN CTRL TBL           80801870
                     *                                                  80801880
0842 0 C8D3                LDD      DSKA0    GET DISK ADDRS               80801890
0843 0 DBD4                STD    3 -44      SET IN TBL                   80801900
0844 0 C8D3                LDD      DSKA2                                 80801910
0845 0 DBD6                STD    3 -42                                   80801920
0846 0 C8D3                LDD      DSKA4                                 80801930
0847 0 DBD8                STD    3 -40                                   80801940
0848 0 C8D3                LDD      DSKA6                                 80801950
0849 0 DBDA                STD    3 -38                                   80801960
                     *                                                  80801970
084A 1 4C80 0821           BSC  I DIPA       EXIT TO MONITOR        SX    80801980
                     *                                     *          80801990
                     *.....................................*          80802000
                     *           LOOP PROGRAM ROUTINE      *          80802010
                     *.....................................*          80802020
                     *                                     *          80802030
084C 0 0000          DLPA  DC     0         ENTRY                        80802040
084D 1 6700 0B88           LDX  L3 DCT       SET X3 ADDR CTRL       SE    80802050
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084F 0 C3B5                LD     3 -75      GET POLLING ADDR             80802060
0850 0 D0BA                STO      MLN      SET IT IN MLSCF              80802070
0851 1 4C80 084C           BSC  I DLPA       EXIT TO MONITOR        SX    80802080
                     *                                     *          80802090
                     *.....................................*          80802100
                     *           END PROGRAM ROUTINE       *          80802110
                     *.....................................*          80802120
                     *                                     *          80802130
0853 0 0000          DEPA  DC     0         ENTRY                        80802140
0854 1 6700 0B88           LDX  L3 DCT       SET X3 ADDR CTRL       SE    80802150
                     *                                                  80802160
0856 0 438E                BSI    3 -114     BR TO RELEASE DEVISE   SC    80802170
0857 1 4C80 0853           BSC  I DEPA       EXIT FROM PROGRAM      SX    80802180
                     *                                     *          80802190
                     *.....................................*          80802200
                     *          MAINLINE PROGRAM CTRL      *          80802210
                     *.....................................*          80802220
                     *                                     *          80802230
0859 0 6116          DCTRL LDX    1 22        SET CLEAR LOOP XTNT    SE    80802240
085A 0 1010                SLA    16         CLR ACCUM                    80802250
085B 1 D500 0B8D     DCTL1 STO  L1 DCT&5      RESET DCT FIELD              80802260
085D 0 71FF                MDX    1 -1       DEC LOOP CTRL                80802270
085E 0 70FC                MDX      DCTL1    BR LOOP                      80802280
                     *                                                    80802290
085F 1 6700 0B88     DCTL2 LDX  L3 DCT       SET X3 ADDR CTRL             80802300
                     *                                                    80802310
0861 0 C300                LD     3 0        CLR A REG                    80802320
0862 0 D30A                STO    3 10       SET PRESENT ADDR             80802330
                     *                                                    80802340
0863 0 C3F8                LD     3 -8       GET A CSI OF ONE             80802350
0864 0 D30B                STO    3 11       SET IN DESIRED ADDR          80802360
0865 0 43AE                BSI    3 -82      BR TO SEEK SUB RT      SC    80802370
                     *                                                    80802380
0866 0 4380                BSI    3 -128     BR TO DCARM RT         SC    80802390
                     *                                                    80802400
0867 1 4C00 0880           BSC  L DMLCK      BR TO DIMAL CHECK      SC    80802410
                     *                                                    80802420
0869 1 C400 0803     DCTL3 LD   L SW1        GET FNC SW 1 INFO            80802430
086B 1 4C20 0879           BSC  L DCTL5,Z    BR IF FNC NOT ZERO           80802440
                     *                                                    80802450
086D 1 7401 0BA1           MDX  L DCT&25,1   ADD ONE TO RT NUMBER          80802460
                     *                                                    80802470
086F 1 6680 0BA1     DCTL4 LDX  I2 DCT&25    GET RT NUMBER                80802480
0871 1 6E00 0800           STX  L2 RID       SET IN TABLE                 80802490
0873 1 C600 087C           LD   L2 DDSA-1    GET RT ADDR                  80802500
0875 1 D400 0801           STO  L  RAD       SET IN TABLE                 80802510
0877 1 4E80 087C           BSC  I2 DDSA-1    BR TO EXEQ RT          SX    80802520
                     *                                                    80802530
0879 0 E3FD          DCTL5 AND    3 -3       PASS MAX RT CNT              80802540
087A 0 D319                STO    3 25       SET RT NUMBER IN DCT         80802550
087B 0 70F3                MDX      DCTL4    BR TO CONTINUE               80802560
                     *                                     *              80802570
                     *.....................................*              80802580
                     *           DISK DIAG START ADDR      *              80802590
                     *.....................................*              80802600
                     *                                     *              80802610
087C 1 08BC                DC       DCEOD    NO RT SEL END DIAG.          80802620
087D 1 0DB3          DDSA  DC       F01AA    WR ADDR AND SECT PAT         80802630
087E 1 0E07                DC       F02AA    VERIFY ALL ADDR RT           80802640
087F 1 0E32                DC       F03AA    WR CE SECT 3/7 DATA          80802650
                     *                                     *              80802660
                     *.....................................*              80802670
                     *        DIMAL-CUST-CE PACK CK RT     *              80802680
                     *.....................................*              80802690
                     *                                     *              80802700
0880 0 C3D8          DMLCK LD     3 -40      GET CE HIST ADDR       SE    80802710
0881 0 D30B                STO    3 11       SET DESIRED ADDR             80802720
0882 0 43AE                BSI    3 -82      BR TO SEEK SUB RT      SC    80802730
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                        *                                                       80802740
                        *                                                       80802750
0883 0 C3E5             LD    3 -27       GET WORD COUNT                        80802760
0884 0 D30D             STO   3 13        SET WORD COUNT                        80802760
0885 0 43A8             BSI   3 -88       BR TO READ SUB RT     SC              80802770
0886 0 7018             MDX     DMLE1     BR TO ERR RD RTN                      80802780
                        *                                                       80802790
0887 1 C400 0C57        LD    L DCDA&2    GET SECOND DATA WORD                  80802800
0889 0 F014             EOR     DMLXT     TEST FOR DIMAL IND                    80802810
088A 1 4C18 0896        BSC   L DMLIC,&-  BR IF DIMAL PATTERN                   80802820
                        *                                                       80802830
088C 0 C3D8             LD    3 -40       GET BASIC CE ADDR                     80802840
088D 0 EBF9             OR    3 -7        SET IN CE SECT ADDR                   80802850
088E 0 D30B             STO   3 11        SET ADDR IN CTRL TBL                  80802860
088F 0 43A8             BSI   3 -88       BR TO READ SUB RT     SC              80802870
0890 0 7012             MDX     DMLE2     BR TO ERR RD RTN                      80802880
                        *                                                       80802890
0891 1 C400 0C57        LD    L DCDA&2    GET SECOND DATA WORD                  80802900
0893 0 F3C7             EOR   3 -57       TEST FOR CE PACK IND                  80802910
0894 1 4C18 0869        BSC   L DCTL3,&-  BR TO INIT IF CE IND  SX              80802920
                        *                                                       80802930
0896 1 C400 0805 DMLIC  LD    L SW3       GET SW 3 FUNCTION     SX              80802940
0898 1 4C28 0869        BSC   L DCTL3,Z&  BR TO INIT IF NEG                     80802950
                        *                                                       80802960
089A 0 4328             BSI   3 40        BR TO MSAG FORM 0     MC              80802970
089B 0 A0DC             DC      /A0DC     -- MSAG # --                          80802980
                        *                                                       80802990
089C 0 30CE WAIT1       DC      /30CE     WAIT FOR CE GO AHEAD                  80803000
089D 0 70F8             MDX     DMLIC     LOOP TO RE-CHECK                      80803010
                        *                                                       80803020
                        *                                                       80803030
089E 0 ABCD DMLXT       DC      /ABCD     DIMAL CTRL XTNT                       80803040
                        *                                                       80803050
                        *                                                       80803060
089F 0 4334 DMLE1       BSI   3 52        BR TO MSAG FORM 2     MC              80803070
08A0 0 E062             DC      /E062     -- MSAG # --                          80803080
08A1 1 0880             DC      DMLCK     ERR LOOP ADDR                         80803090
08A2 0 70F3             MDX     DMLIC     BR TO CE CTRL WAIT                    80803100
                        *                                                       80803110
08A3 0 4334 DMLE2       BSI   3 52        BR TO MSAG FORM 2     MC              80803120
08A4 0 E063             DC      /E063     -- MSAG # --                          80803130
08A5 1 0880             DC      DMLCK     ERR LOOP ADDR                         80803140
08A6 0 70EF             MDX     DMLIC     BR TO CE CTRL WAIT                    80803150
                        *                                                       80803160
                        *                                       *               80803170
                        *.....................................*                 80803180
                        *          TEST RETURN CONTROL        *                 80803190
                        *.....................................*                 80803200
                        *                                       *               80803210
08A7 1 C400 0805 DCRTN  LD    L SW3       GET SW FNC 3 DATA     SC              80803220
08A9 0 1801             SRA     1         SHIFT TO CHECK 14                     80803230
08AA 1 4C04 08AD        BSC   L DCRHM,E   BR IF BIT 14 IS ON                    80803240
08AC 0 4380             BSI   3 -128      BR TO DCARM RT        SC              80803250
08AD 1 C400 0803 DCRHM  LD    L SW1       GET SW FNC 1 DATA                     80803260
08AF 1 4C20 0879        BSC   L DCTL5,Z   BR IF FNC NOT ZERO                    80803270
                        *                                                       80803280
08B1 0 C319             LD    3 25        GET ROUTINE ID NUM                    80803290
08B2 0 F3FD             EOR   3 -3        TEST FOR LAST RT                      80803300
08B3 1 4C20 0869        BSC   L DCTL3,Z   BR TO CONTINUE TESTS                  80803310
                        *                                                       80803320
08B5 1 7401 0BA0        MDX   L DCT&24,1  ADD TO PROG PASS CNT                  80803330
08B7 0 1000             NOP     0         SAFTY NOP                             80803340
                        *                                                       80803350
                        *                                                       80803360
08B8 0 1010             SLA     16        CLR ACC                               80803370
08B9 0 D319             STO   3 25        CLR RT ID NUMBER                      80803380
                        *                                                       80803390
08BA 0 4350             BSI   3 80        BR TO MSAG FORM 4     MC              80803400
08BB 0 A001             DC      /A001     -- MSAG # --                          80803410
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                        *                                                       80803420
                        *                                                       80803430
08BC 0 4328 DCEOD       BSI   3 40       BR TO MSG FORM 0      MC              80803440
08BD 0 AE0D             DC      /AE0D     -- MSAG # --                          80803450
                        *                                                       80803460
08BE 0 1000 DCRND       NOP     0         STOP NOP                              80803470
08BF 0 30ED WAIT2       DC      /30ED     INIT END WAIT                         80803480
                        *                 SEE BEGINNING OF                      80803490
                        *                 LISTING FOR INST                      80803500
08C0 0 70FD             MDX     DCRND     WAIT BRANCH LOOP                      80803510
                        *                                       *               80803520
                        *.....................................*                 80803530
                        *          LOST INTERRUPT RT          *                 80803540
                        *.....................................*                 80803550
                        *                                       *               80803560
08C1 1 6700 0B88 DLNRT  LDX   L3 DCT      SET X3 CTRL ADDR      SE              80803570
08C3 0 C31B             LD    3 27        GET TIMER CNT                         80803580
08C4 0 83FF             A     3 -1        ADD &1 TO CNT                         80803590
08C5 0 D31B             STO   3 27        SAVE NEW CNT                          80803600
08C6 0 F31C             EOR   3 28        TEST FOR LIMIT                        80803610
08C7 0 4820             BSC     Z         Q. EQ TO LIMIT                        80803620
08C8 0 700B             MDX     DLNR1     NO, PROCEED                           80803630
                        *                                                       80803640
08C9 0 0BBA             XIO   3 -70       SENSE DSW                             80803650
08CA 0 D308             STO   3 8         SET DSW IN DCT                        80803660
08CB 0 43B1             BSI   3 -79       BR TO ERR MSAG RT     SC              80803670
08CC 0 4334             BSI   3 52        BR TO MSAG FORM 2     MC              80803680
08CD 0 E001             DC      /E001     -- MSAG # --                          80803690
08CE 0 0000             DC      0         NO ERROR LOOP ADDR                    80803700
                        *                                                       80803710
08CF 0 1010             SLA     16        CLEAR ACCUM                           80803720
08D0 0 D31B             STO   3 27        CLEAR LOST NTRPT CTR                  80803730
08D1 0 438E             BSI   3 -114      RELEASE RT            SC              80803740
08D2 0 4386             BSI   3 -122      BR TO RE-ZERO ARM     SC              80803750
08D3 0 709B             MDX     DCTL4     BR TO RE-TRY ROUTINE  SX              80803760
                        *                                                       80803770
08D4 0 C31D DLNR1       LD    3 29        GET NXT MLN ENTRY                     80803780
08D5 1 4C18 08DB        BSC   L DLAND,&-  BR 0 - NTRPT OCCURED                  80803790
08D7 1 6700 08C1        LDX   L3 DLNRT    GET LST NTRPT RT ADR                  80803800
08D9 1 6F00 0809        STX   L3 LIV      SET IT IN MLSCF                       80803810
08DB 0 4C80 012D DLAND  BSC   I  START    BR TO MONITOR         XM              80803820
                        *                                                       80803830
                        *                                       *               80803840
                        *.....................................*                 80803850
                        *        DISK INTERRUPT ROUTINE       *                 80803860
                        *.....................................*                 80803870
                        *                                       *               80803880
08DD 0 0000 DVA         DC      0         DISK AREA CODE ID     PM              80803890
                        *                                                       80803900
08DE 0 0000 NTRPT       DC      0                                               80803910
08DF 1 6700 0B88        LDX   L3 DCT      SET X3 CTRL ADDR      SE              80803920
                        *                                                       80803930
08E1 0 0BBA             XIO   3 -70       SENSE RESET DSW                       80803940
08E2 0 D308             STO   3 8         SAVE IT IN TBL                        80803950
                        *                                                       80803960
08E3 0 C31D             LD    3 29        GET RETURN ADDR                       80803970
08E4 1 D400 080B        STO   L MLN       SET IT IN MLSCF                       80803980
08E6 1 4C18 08F0        BSC   L NTRER,&-  BR TO ERR RT IF ZERO                  80803990
                        *                                                       80804000
08E8 0 1010 NTRST       SLA     16        CLR ACCUM                             80804010
08E9 0 D306             STO   3 6         CLR FUNCTION                          80804020
08EA 0 D31B             STO   3 27        CLR LST NTRPT CTR                     80804030
08EB 0 D31D             STO   3 29        CLR NTRUPT ADDR DCT                   80804040
08EC 1 D400 0809        STO   L LIV       CLR LST NTRPT RT XFR                  80804050
                        *                                                       80804060
08EE 1 4C80 08DE NTRXT  BSC   I NTRPT     EXIT TO MONITOR       SX              80804070
                        *                                                       80804080
08F0 0 70FF NTRER       MDX     NTRER     NO ML MLSCF ADDR      PH              80804090
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                         *                                       *          80804100
                         *.....................................*          80804110
                         *          READ WRITE ADDR CK RT      *          80804120
                         *.....................................*          80804130
                         *                                       *          80804140
                         *                                       *          80804150
08F1 0 0000              RWACK DC      0          ENTRY                     80804160
08F2 1 C400 0EA4             LD    L  CYLEX      GET CYL ERR CNT       SE  80804170
08F4 1 4C18 08FF             BSC   L  RWCKX,&-   BR OUT IF ZERO             80804180
08F6 1 6580 0EA4             LDX   I1 CYLEX      GET LOOP COUNT            80804190
08F8 1 C500 0EB7         RWCKA LD    L1 CYLET-1   GET LAST ADDR             80804200
08FA 0 F30B                  EOR    3 11         TEST AGAINST DESIRED      80804210
08FB 1 4C18 0901             BSC   L  RWCKT,&-   BR IF EQ -- BAD ADDR       80804220
08FD 0 71FF                  MDX    1 -1         DEC CTRL                  80804230
08FE 0 70F9                  MDX      RWCKA      LOOP                      80804240
                         *                                                 80804250
08FF 1 4C80 08F1         RWCKX BSC   I  RWACK     EXIT TO CALL RT       SX  80804260
                         *                                                 80804270
0901 0 43B1              RWCKT BSI    3 -79       BR TO ERR MSAG RT     SC  80804280
0902 0 4334                    BSI    3 52       BR TO MSAG FORM 2     MC  80804290
0903 0 E004                    DC       /E004    -- MSAG # --              80804300
0904 0 0000                    DC       0        NO ERR LOOP ADDR          80804310
                         *                                                 80804320
0905 0 C319                    LD     3 25       GET RT EXEQ NUMBER        80804330
0906 0 F3FD                    EOR    3 -3       TEST FOR RT 3             80804340
0907 1 4C18 0916               BSC   L  RWRT3,&-  BR TO SET RT 3 RETRN  SX  80804350
                         *                                                 80804360
0909 0 C30B                    LD     3 11       GET CURRENT ADDR          80804370
090A 0 1803                    SRA      3        SHIFT RIGHT HD-SECT       80804380
090B 0 1003                    SLA      3        SHIFT LEFT HD-SECT        80804390
090C 1 4C18 08A7               BSC   L  DCRTN,&-  END RT BR IF ZERO         80804400
090E 0 93F8                    S      3 -8       DEC DISK ADDR BY 1        80804410
090F 0 EBF9                    OR     3 -7       SET HI SECT  ADDR         80804420
0910 0 D30B                    STO    3 11       SET IN DESIRED ADDR       80804430
0911 1 6580 0E31               LDX    I1 F02XB   GET CURRENT CTRL CNT       80804440
0913 0 71F9                    MDX    1 -7       DEC FOR ONE TOT CYL       80804450
0914 1 6400 0E17               LDX   L  F02AC&5   BR TO CONTINUE RT 2    SX  80804460
                         *                                                 80804470
0916 0 4328              RWRT3 BSI    3 40       BR TO MSAG FORM 0     MC  80804480
0917 0 E077                    DC       /E077    -- MSAG # --              80804490
0918 0 0000                    DC       0        NO ERR LOOP ADDR          80804500
                         *                                                 80804510
0919 0 4396                    BSI    3 -106     BR TO MONITOR END     PX  80804520
                         *.....................................*          80804530
                         *          DISK WRITE ROUTINE         *          80804540
                         *.....................................*          80804550
                         *                                       *          80804560
091A 0 7004              DCWR  MDX      DCW10    BR / NOP SWITCH       SE  80804570
                         *                                                 80804580
0918 0 40D5                    BSI      RWACK    RD/WR ADDR CK RT      SC  80804590
091C 0 1010                    SLA      16       CLEAR A REG               80804600
091D 0 D3E0                    STO    3 -32      RESET SOFT RD ERR         80804610
091E 0 D3DE                    STO    3 -34      RESET HARD RD ERR         80804620
                         *                                                 80804630
                         *                                                 80804640
091F 0 C323              DCW10 LD     3 35       GET WRITE FUNCTION        80804650
0920 0 D306                    STO    3 6        SET IT IN DCT             80804660
0921 0 D3DF                    STO    3 -33      MEM FNC HOLDER            80804670
0922 0 C30B                    LD     3 11       GET DESIRED ADDR          80804680
0923 1 D400 0C56               STO   L  DCDA&1    SET IT IN I/O ADDR        80804690
                         *                                                 80804700
0925 0 406C                    BSI      CDTRT    CMN DATA XFER RT      SC  80804710
                         *                                                 80804720
0926 1 7401 0B99               MDX   L  DCT&17,1  ADD TO TOTAL WR CTR       80804730
0928 0 1000                    NOP      0        SAFTY NOP                 80804740
                         *                                                 80804750
0929 1 4400 09B8               BSI   L  CDTSN     BR TO CK DSW          SC  80804760
092B 0 7002                    MDX      DCWEL    WRITE ERR BR RETURN       80804770
```



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                         *                                                 80804780
092C 1 7401 0B33               MDX   L  DWR,1     ADD TO EXIT RTN OK        80804790
092E 0 C315              DCWEL LD     3 21       GET TOT HRD WR ERRS       80804800
092F 0 83DE                    A      3 -34      ADD NEW HRD ERRS          80804810
0930 0 D315                    STO    3 21       SAVE NEW TOTAL            80804820
0931 0 C314                    LD     3 20       GET TOT SFT WR ERRS       80804830
0932 0 83E0                    A      3 -32      ADD NEW SFT ERRS          80804840
0933 0 D314                    STO    3 20       SAVE NEW TOTAL            80804850
                         *                                                 80804860
0934 1 4C80 0B33         DCWBB BSC   I  DWR       EXIT TO CALL RT       SX  80804870
                         *                                       *         80804880
                         *.....................................*          80804890
                         *          DISK READ ROUTINE          *          80804900
                         *.....................................*          80804910
                         *                                       *          80804920
0936 0 7001              DCRD  MDX      DCR10    BR / NOP SWITCH       SE  80804930
                         *                                                 80804940
0937 0 40B9                    BSI      RWACK    RD/WR ADDR CK RT      SC  80804950
                         *                                                 80804960
0938 0 1010              DCR10 SLA      16       CLEAR A REG               80804970
0939 0 D3E0                    STO    3 -32      RESET SOFT RD ERR         80804980
093A 0 D3DE                    STO    3 -34      RESET HARD RD ERR         80804990
093B 0 D3EB                    STO    3 -21      RESET  RD-SK SW 1         80805000
093C 0 C324              DCR12 LD     3 36       GET READ FUNCTION         80805010
093D 0 D306                    STO    3 6        SET IT IN DCT             80805020
093E 0 D3DF                    STO    3 -33      MEM FNC HOLDER            80805030
093F 0 C31A                    LD     3 26       GET RD / RD-CK MOD        80805040
0940 1 4C30 0945               BSC   L  DCR16,Z-  BR BY ADDR CLR IF &      80805050
0942 0 1010                    SLA      16       CLR ACC                   80805060
0943 1 D400 0C56               STO   L  DCDA&1    CLR READ I/O ADDR         80805070
                         *                                                 80805080
0945 0 404C              DCR16 BSI      CDTRT    CMM DATA XFER RT      SC  80805090
                         *                                                 80805100
0946 1 7401 0B9A               MDX   L  DCT&18,1  ADD TO TOTAL RD CTR       80805110
0948 0 1000                    NOP      0        SAFTY NOP                 80805120
                         *                                                 80805130
0949 0 406E                    BSI      CDTSN    BR TO CK DSW & OPCMP  SC  80805140
094A 0 703F                    MDX      DCREL    READ ERR BR RETURN        80805150
                         *                                                 80805160
094B 1 C400 0C56               LD    L  DCDA&1   GET ACTUAL ADDR           80805170
094D 0 D30C                    STO    3 12       SET ADDR IN DCT           80805180
094E 0 F30B                    EOR    3 11       CK ACTUAL EQ DESIRED      80805190
094F 1 4C18 097D               BSC   L  DCRGA,&-  BR IF ADDR IS OK          80805200
                         *                                                 80805210
0951 0 C3EB                    LD     3 -21      GET SW 1                  80805220
0952 1 4C10 0965               BSC   L  DCR21,-   BR IF NOT 3RD  RE-RD      80805230
                         *                                                 80805240
0954 0 C026                    LD       DCRE1    GET FIRST E008 AAR        80805250
0955 0 F026                    EOR      DCRE2    COMP 2ND E008 AAR         80805260
0956 1 4C20 0961               BSC   L  DCR20,Z   BR IF E008 RDS UNEQ       80805270
                         *                                                 80805280
0958 0 4334                    BSI    3 FORM2-DCT BR TO MSAG FORM 2     MC  80805290
0959 0 E009                    DC       /E009    -- MSAG # --              80805300
095A 1 0936                    DC       DCRD     ERROR LOOP ADDR           80805310
                         *                                                 80805320
095B 0 1010                    SLA      16       CLEAR A REG               80805330
095C 0 D3E0                    STO    3 -32      RESET SOFT RD ERR         80805340
095D 1 7401 0B9B         DCR19 MDX   L  DCT&19,1  ADD ONE TO RESK ERR       80805350
095F 0 1000                    NOP      0        SAFTY NOP                 80805360
                         *                                                 80805370
0960 0 7029                    MDX      DCREL    RD ERR BR RETURN          80805380
                         *                                                 80805390
0961 0 4334              DCR20 BSI    3 FORM2-DCT BR TO MSAG FORM 2     MC  80805400
0962 0 E015                    DC       /E015    -- MSAG # --              80805410
0963 1 0936                    DC       DCRD     ERROR LOOP ADDR           80805420
0964 0 70F8                    MDX      DCR19    RD ERR BR RETURN          80805430
                         *                                                 80805440
0965 0 4334              DCR21 BSI    3 FORM2-DCT BR TO MSAG FORM 2     MC  80805450
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0966 0 E008              DC      /E008      -- MSAG # --                80805460
0967 0 0000              DC      0          NO ERROR LOOP ADDR          80805470
                         *                                              80805480
0968 0 C3EB              LD      3 -21      GET SW 1                    80805490
0969 1 4C20 0973         BSC  L  DCR23,Z    BR IF 2ND E008 PASS         80805500
                         *                                              80805510
096B 0 C30C              LD      3 12       GET 1ST AAR OF E008         80805520
096C 0 D00E              STO     DCRE1      SAVE IT                     80805530
096D 0 C3CD     DCR22    LD      3 -51      GET 4000 HEX                80805540
096E 0 D3EB              STO     3 -21      SET SW 1 TO & OR -          80805550
                         *                                              80805560
096F 0 C3E0              LD      3 -32      GET SFT RD TEMP CNT.        80805570
0970 0 83FF              A       3 -1       ADD ONE TO ERROR CNT        80805580
0971 0 D3E0              STO     3 -32      SAVE NEW COUNT              80805590
                         *                                              80805600
0972 0 70C9              MDX     DCR12      BR TO RE-READ ADDR          80805610
                         *                                              80805620
0973 0 C30C     DCR23    LD      3 12       GET 2ND AAR OF E008         80805630
0974 0 D007              STO     DCRE2      SAVE IT                     80805640
0975 0 4386              BSI     3 -122     BR TO RE-ZERO ARM &   SC    80805650
                         *                   RE-SEEK DESIRED ADR        80805660
0976 1 7401 0B98         MDX  L  DCT&19,1   ADD ONE TO RESK ERR          80805670
0978 0 1000              NOP     0          SAFTY NOP                   80805680
                         *                                              80805690
0979 0 C3BF              LD      3 -65      GET 8000 HEX XTNT           80805700
097A 0 70F3              MDX     DCR22&1    BR TO SET SW 1              80805710
                         *                                              80805720
097B 0 0000     DCRE1    DC      0          E008 AAR 1                  80805730
097C 0 0000     DCRE2    DC      0          E008 AAR 2                  80805740
                         *                                              80805750
097D 0 C3EB     DCRGA    LD      3 -21      GET SW1                     80805760
097E 1 4C10 0985         BSC  L  DCROK,-    BR IF RD ADDR OK            80805770
0980 0 C3E0              LD      3 -32      GET SFT RD ERR TEMP         80805780
0981 0 93FE              S       3 -2        COUNT & CORRECT IT         80805790
0982 0 D3E0              STO     3 -32      SAVE CORRECTED CNT          80805800
                         *                                              80805810
0983 0 4328              BSI     3 FORMO-DCT BR TO MSAG FORM 0     MC    80805820
0984 0 A004              DC      /A004      -- MSAG # --                80805830
                         *                                              80805840
0985 1 7401 0B30 DCROK   MDX  L  DRD,1      ADD TO EXIT RT OK           80805850
0987 0 C30C              LD      3 12       GET ACTUAL DISK ADDR        80805860
0988 0 D30A              STO     3 10       SET IT IN DCT PRESNT        80805870
0989 0 D309              STO     3 9        SET IT IN LAST GOOD         80805880
098A 0 C317     DCREL    LD      3 23       GET TOTL HRD RD ERRS        80805890
098B 0 83DE              A       3 -34      ADD NEW HRD ERRS            80805900
098C 0 D317              STO     3 23       SAVE NEW TOTAL              80805910
098D 0 C316              LD      3 22       GET TOT SFT RD ERRS         80805920
098E 0 83E0              A       3 -32      ADD NEW SFT ERRS            80805930
098F 0 D316              STO     3 22       SAVE NEW TOTAL              80805940
                         *                                              80805950
0990 1 4C80 0B30 DCRBB   BSC  I  DRD        EXIT TO CALL RT       SX    80805960
                         *.....................................*        80805970
                         *          COMMON RD / WR ROUTINE     *        80805980
                         *.....................................*        80805990
                         *                                     *        80806000
0992 0 0000     CDTRT    DC      0          ENTRY                       80806010
0993 0 1010              SLA     16         CLR ACC               SE    80806020
0994 0 D30E              STO     3 14       CLR RETRY CTR               80806030
                         *                                              80806040
0995 0 4388     CDTBC    BSI     3 -120     DCRDY RT              SC    80806050
                         *                                              80806060
0996 0 C30D              LD      3 13       GET WORD COUNT              80806070
0997 1 D400 0C55         STO  L  DCDA       SET IT IN I/O FLD           80806080
0999 0 C3DF              LD      3 -33      GET MEM HLD FNC             80806090
099A 0 D306              STO     3 6        SET IT IN DCT FNC WD        80806100
099B 0 C30B              LD      3 11       GET DESIRED ADDR            80806110
099C 0 100D              SLA     13         CLR CYL NUMBER              80806120
099D 0 180D              SRA     13         CLR CYL NUMBER              80806130
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099E 0 EB1A              OR      3 26       RD/RD CK MODIFIER           80806140
099F 0 D307              STO     3 7        SET ADJ MOD IN DCT          80806150
09A0 0 C301              LD      3 1        GET I/O ADDR                80806160
09A1 0 D304              STO     3 4        SET IT IN DCT               80806170
                         *                                              80806180
09A2 0 4392     CDTRC    BSI     3 -110     DCDSW RT              SC    80806190
                         *                                              80806200
09A3 0 E3C5              AND     3 -59      TEST BITS                   80806210
09A4 1 4C18 09AD         BSC  L  CDTSE,&-   BR ZERO TO CONTINUE         80806220
                         *                                              80806230
09A6 0 43B1              BSI     3 -79      BR TO ERR MSAG RT     SC    80806240
09A7 0 432E              BSI     3 46       BR TO MSAG FORM 1     MC    80806250
09A8 0 E005              DC      /E005      -- MSAG # --                80806260
09A9 1 09A2              DC      CDTRC      ERR LOOP ADDR               80806270
                         *                                              80806280
09AA 0 0BBA              XIO     3 -70      SENSE RESET DSW             80806290
09AB 0 D308              STO     3 8        SET DSW IN DCT              80806300
09AC 0 4396              BSI     3 -106     BR TO MONITOR END     SX    80806310
                         *                                              80806320
09AD 0 C3B7     CDTSE    LD      3 -73      GET RETURN ADDR             80806330
09AE 0 D31D              STO     3 29       SET IT IN DCT               80806340
                         *                                              80806350
09AF 0 4382              BSI     3 -126     BR TO EXEQ RT         SC    80806360
                         *                                              80806370
09B0 0 439C              BSI     3 -100     MONITOR START RT      XM    80806380
                         *                                              80806390
09B1 1 6700 0B88 CDTNR   LDX  L3 DCT        SET X3 CTRL ADDR      SE    80806400
09B3 0 C300              LD      3 0        GET ZERO XTNT               80806410
09B4 0 D307              STO     3 7        CLR MODIFIER                80806420
                         *                                              80806430
09B5 0 438E              BSI     3 -114     RELEASE RT            SC    80806440
                         *                                              80806450
09B6 1 4C80 0992         BSC  I  CDTRT      EXIT TO CALL RT       SX    80806460
                         *                                         *    80806470
                         *    ****      ** CHECK DSW RD/WR **     *    80806480
                         *                                         *    80806490
09B8 0 0000     CDTSN    DC      0          ENTRY                       80806500
09B9 0 C308              LD      3 8        GET DSW IN DCT        SE    80806510
09BA 0 E3C5              AND     3 -59      PASS TEST BITS              80806520
09BB 0 F3CD              EOR     3 -51      TEST ALL FOR OK             80806530
09BC 1 4C18 09DA         BSC  L  CDTGX,&-   BR ZERO ALL OK              80806540
                         *                                              80806550
09BE 1 C400 0C56         LD   L  DCDA&1     GET ACTUAL ADDR             80806560
09C0 0 D30C              STO     3 12       SET ADDR IN DCT TBL         80806570
                         *                                              80806580
09C1 0 43B1              BSI     3 -79      BR TO ERR MSAG RT     SC    80806590
09C2 0 4334              BSI     3 52       BR TO MSAG FORM 2     MC    80806600
09C3 0 E006              DC      /E006      -- MSAG # --                80806610
09C4 0 0000              DC      0          NO ERR LOOP ADDR            80806620
                         *                                              80806630
09C5 1 C400 0805         LD   L  SW3        GET SW FNC 3 DATA           80806640
09C7 0 4804              BSC     E          SKIP IF EVEN                80806650
09C8 0 7015              MDX     DSPLA      BR TO DISPLAY IOA RT        80806660
                         *                                              80806670
09C9 1 7401 0B68 CDTLK   MDX  L  DCT-32,1   ADD TO SFT ERR HOLDR         80806680
09CB 0 1000              NOP     0          SAFTY NOP                   80806690
09CC 0 C30E              LD      3 14       GET ERR TRY CTR             80806700
09CD 0 83FF              A       3 -1       ADD TO TRY CTR              80806710
09CE 0 D30E              STO     3 14       SAVE CTR TOTAL              80806720
09CF 0 F3F6              EOR     3 -10      TEST FOR TENTH TRY          80806730
09D0 1 4C20 0995         BSC  L  CDTBC,Z    LOOP TO RETRY AUTO          80806740
                         *                                              80806750
09D2 1 7401 0B66         MDX  L  DCT-34,1   ADD TO HRD ERR HOLDR         80806760
09D4 0 1000              NOP     0          SAFTY NOP                   80806770
                         *                                              80806780
09D5 0 43B1              BSI     3 -79      BR TO ERR MSAG RT     SC    80806790
09D6 0 432E              BSI     3 46       BR TO MSAG FORM 1     MC    80806800
09D7 0 E007              DC      /E007      -- MSAG # --                80806810
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09D8 1 0993              DC      CDTRT&1    ERR LOOP ADDR                    80806820
                         *                                                   80806830
09D9 0 7002              MDX     CDTGX&2    BR TO EXIT INST                  80806840
                         *                                                   80806850
09DA 1 7401 09B8 CDTGX   MDX  L  CDTSN,1     ADD TO EXIT CTRL                 80806860
09DC 1 4C80 09B8         BSC  I   CDTSN      EXIT GOOD I/O OP          SX     80806870
                         *                                                   80806880
09DE 0 690D      DSPLA   STX  1   DSPX1&1    SAVE X1 CONTENTS                 80806890
09DF 0 6500 FEBF         LDX  L1  -321       SET X1 CONTROL COUNT             80806900
                         *                                                   80806910
09E1 1 C400 0805 DSPLP   LD   L   SW3        GET SW FNC 3 DATA                80806920
09E3 0 4804              BSC      E          SKIP IF BIT 15 OFF               80806930
09E4 0 7001              MDX      *&1        GO TO DISPLAY LOGIC              80806940
09E5 0 7005              MDX      DSPX1      BR TO RESET X1                   80806950
                         *                                                   80806960
09E6 1 C500 0D96         LD    L1 DCDA&321   GET I/O AREA WORD                80806970
09E8 0 30DA              DC       /30DA      WAIT TO LOOK AT IT               80806980
                         *                                                   80806990
                         *                                                   80807000
09E9 0 7101              MDX   1  1          DEC X1 FOR NXT WORD              80807010
09EA 0 70F6              MDX      DSPLP      DISPLAY LOOP                     80807020
                         *                                                   80807030
09EB 0 6500 0000 DSPX1   LDX  L1  0          RESTORE X1                       80807040
09ED 0 70DB              MDX      CDTLK      BR OUT TO CONTINUE               80807050
                         *                                          *        80807060
                         *.........................................*        80807070
                         *              FAR SEEK SUBROUTINE        *        80807080
                         *.........................................*        80807090
                         *                                          *        80807100
09EE 0 4388              DCSK  BSI    3 -120    BR TO DCRDY RT            SC  80807110
                         *                                                   80807120
09EF 0 C30B              LD     3 11           GET DESIRED ADDR             80807130
09F0 0 93CF              S      3 -49          TEST AGAINST MAX ADR         80807140
09F1 1 4C30 0A1F         BSC  L DSKIA,Z-       BR IF ADDR OVER MAX          80807150
09F3 1 4400 0A82         BSI  L ADSKC          BR TO 13/44 DRTN             80807160
09F5 0 7034              MDX    DSK13          BR TO 13 SD SECTION          80807170
                         *                                                   80807180
09F6 0 C30A              LD     3 10           GET PRESENT ADDR             80807190
09F7 0 F30B              EOR    3 11           TEST AGAINST DESIRED         80807200
09F8 0 1803              SRA      3            DROP BITS 13 TO 15           80807210
09F9 1 4C18 0A10         BSC  L DSKBB,&-       BR OUT IF ADDR IS EQ         80807220
                         *                                                   80807230
09FB 0 C30B              LD     3 11           GET DESIRED ADDR             80807240
09FC 0 1803              SRA      3            CLEAR HEAD-SECT BITS         80807250
09FD 0 D304              STO    3 4            SET ADDR IN DCT              80807260
09FE 0 D302              STO    3 2            SAVE ADDR IN HOLDER          80807270
09FF 0 C321              LD     3 33           GET SEEK FUNCTION            80807280
0A00 0 D306              STO    3 6            SET IT IN DCT                80807290
0A01 0 D3DF      DSKEE   STO    3 -33          SET IN MEM FNC HLDR          80807300
0A02 0 4388              BSI    3 -120         BR TO DCRDY RT            SC  80807310
0A03 0 C3B8              LD     3 -72          GET RETURN ADDR              80807320
0A04 0 D08D              STO      CDTRT        SET IT IN COM SETUP          80807330
0A05 0 709C              MDX      CDTRC        BR TO COM I/O OP RT          80807340
                         *                                                   80807350
0A06 1 7401 0B98 DSKNR   MDX  L   DCT&16,1     ADD +1 TO SK CMPLT           80807360
0A08 0 1000              NOP      0            SAFTY NOP                    80807370
                         *                                                   80807380
0A09 0 C308              LD     3 8            GET THE DSW AFTER SK         80807390
0A0A 0 E3C5              AND    3 -59          PASS VALID BITS              80807400
0A0B 0 F3CD              EOR    3 -51          TEST FOR GOOD                80807410
0A0C 1 4C20 0A12         BSC  L DSKER,Z        BR TO SK ERR DSW RT          80807420
                         *                                                   80807430
0A0E 0 C30B      DSKCR   LD     3 11           GET DESIRED ADDR             80807440
0A0F 0 D30A              STO    3 10           SET IT IN PRESENT            80807450
0A10 1 4C80 0B36 DSKBB   BSC  I  DSK          RETURN TO USER            SX  80807460
                         *                                                   80807470
                         *                                                   80807480
0A12 0 1805      DSKER   SRA      5          SHIFT FOR BIT 10                 80807490
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0A13 1 4C04 0A1A         BSC  L  DSKBT,E    BR TO TEST B10 COND              80807500
                         *                                                   80807510
0A15 0 43B1              BSI    3 -79        BR TO ERR MSAG RT         SC     80807520
                         *                                                   80807530
0A16 0 432E              BSI    3 46         BR TO MSAG FORM 1         MC     80807540
0A17 0 E040              DC       /E040      -- MSAG # --                     80807550
0A18 0 0000              DC       0          NO ERR LOOP ADDR                 80807560
0A19 0 70F4              MDX      DSKBB-2    BR TO FINISH SUBRT               80807570
                         *                                                   80807580
0A1A 0 0BBA      DSKBT   XIO    3 -70        SENSE-RESET DSW                  80807590
0A1B 0 0BBA              XIO    3 -70        DO IT AGAIN                      80807600
0A1C 0 1805              SRA      5          SHIFT TO TEST BIT 10             80807610
0A1D 1 4C04 0A24         BSC  L   DSKIS,E    BR IF B10 STILL ON               80807620
                         *                                                   80807630
0A1F 0 43B1      DSKIA   BSI    3 -79        BR TO ERR MSAG RT         SC     80807640
                         *                                                   80807650
0A20 0 4334              BSI    3 52         BR TO MSAG FORM 2         MC     80807660
0A21 0 E041              DC       /E041      -- MSAG # --                     80807670
0A22 0 0000              DC       0          NO ERR LOOP ADDR                 80807680
                         *                   INVALID ADDR SEL                 80807690
0A23 0 4396              BSI    3 -106       RETURN TO MONITOR         PX     80807700
                         *                                                   80807710
0A24 0 43B1      DSKIS   BSI    3 -79        BR TO ERR MSAG RT         SC     80807720
                         *                                                   80807730
0A25 0 432E              BSI    3 46         BR TO MSAG FORM 1         MC     80807740
0A26 0 E042              DC       /E042      -- MSAG # --                     80807750
0A27 1 09EE              DC       DCSK       ERR LOOP ADDR                    80807760
0A28 0 4386              BSI    3 -122       BR TO RESTORE ARM RT      SC     80807770
0A29 0 4399              BSI    3 -103       BR TO CTRL COUNT RT       SC     80807780
                         *                                                   80807790
0A2A 0 C30A      DSK13   LD     3 10         GET PRESENT ADDR                 80807800
0A2B 0 1803              SRA      3          CLEAR HD-SECT                    80807810
0A2C 0 D302              STO    3 2          SAVE FOR CALC                    80807820
0A2D 0 C30B              LD     3 11         GET DESIRED ADDR                 80807830
0A2E 0 1803              SRA      3          CLEAR HD-SECT                    80807840
0A2F 0 9302              S      3 2          CALC INCREMENT                   80807850
0A30 1 4C18 0A10         BSC  L DSKBB,&-     BR RETURN IF ZERO                80807860
                         *                                                   80807870
0A32 1 4C08 0A3A         BSC  L D13HM,&      BR IF INCR NEGATIVE              80807880
                         *                                                   80807890
0A34 0 D302              STO    3 2          SAVE INCREMENT                   80807900
0A35 0 D304              STO    3 4          SAVE INCREMENT                   80807910
0A36 0 C321              LD     3 33         GET INST /X400                   80807920
0A37 0 D306      D13MR   STO    3 6          SET IT IN DCT                    80807930
0A38 1 4C00 0A01         BSC  L DSKEE        BR TO MAIN LINE SEEK             80807940
                         *                                                   80807950
0A3A 0 C30B      D13HM   LD     3 11         GET DESIRED ADDR                 80807960
0A3B 0 1803              SRA      3          CLEAR HD-SECT                    80807970
0A3C 0 D302              STO    3 2          SAVE FOR CALC                    80807980
0A3D 0 C30A              LD     3 10         GET PRESENT ADDR                 80807990
0A3E 0 1803              SRA      3          CLEAR HD-SECT                    80808000
0A3F 0 9302              S      3 2          CALC INCREMENT                   80808010
0A40 0 D302              STO    3 2          SAVE INCREMENT                   80808020
0A41 0 D304              STO    3 4          SAVE INCREMENT                   80808030
0A42 0 C322              LD     3 34         GET INST /X404                   80808040
0A43 0 70F3              MDX      D13MR      BR FOR MAINLINE RTRN             80808050
                         *                                                   80808060
                         *                                          *        80808070
                         *.........................................*        80808080
                         *              CHANNEL BUSY ROUTINE        *        80808090
                         *.........................................*        80808100
                         *                                          *        80808110
0A44 1 6700 0ADF CHNBZ   LDX  L3 CHNRQ       GET CHNRQ ADDR            SE     80808120
0A46 1 6F00 080B         STX  L3 MLN          SET IT IN MLSCF                  80808130
0A48 0 4C80 012D         BSC  I  START        EXIT TO MONITOR           SX     80808140
                         *                                          *        80808150
                         *.........................................*        80808160
                         *              COMMON MSAG NUM ADJ RT      *        80808170
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                        *.........................................*        80808180
                        *                                         *        80808190
0A4A 1 7401 0B39        EMNRT MDX  L  EMF,1       ADJ FOR MSAG NUM     SE 80808200
0A4C 1 C480 0B39              LD   I  EMF         GET BASIC MSAG NUM       80808210
0A4E 0 E3C4                   AND  3 -60        PASS VALID BITS          80808220
0A4F 0 83DF                   A    3 -33        ADD IN RD / WR CODE      80808230
0A50 1 D480 0B39              STO  I  EMF         SET IT IN MSAG RT        80808240
0A52 1 74FF 0B39              MDX  L  EMF,-1      ADJ FOR RETURN ADDR      80808250
0A54 1 4C80 0B39              BSC  I  EMF         RETURN TO CALL RT    SX  80808260
                        *.........................................*        80808270
                        *                                         *        80808280
                        *            13 SD DCARM ROUTINE          *        80808290
                        *                                         *        80808300
                        *.........................................*        80808310
0A56 0 C3FF             DHOME LD    3 -1          GET INCR OF ONE          80808320
0A57 0 D302                   STO   3 2           SAVE INCREMENT           80808330
0A58 0 D304                   STO   3 4           SAVE INCREMENT           80808340
0A59 0 1010                   SLA     16          CLEAR A REG              80808350
0A5A 0 D30A                   STO   3 10          SET ADDR TO ZERO         80808360
0A5B 0 D3E9                   STO   3 -23         CLEAR TRY CNTR           80808370
0A5C 0 C322             DHMLE LD    3 34          BET INST /X404           80808380
0A5D 0 D306                   STO   3 6           SET IT IN DCT            80808390
0A5E 1 6500 0A64              LDX   L1 DHMNR      GET RETURN ADDR          80808400
0A60 1 6D00 0BA5              STX   L1 DCT&29     SET IT IN DCT            80808410
0A62 0 4382                   BSI   3 -126        BR TO EXEQ RT        SC  80808420
0A63 0 439C                   BSI   3 -100        BR TO MON START      XM  80808430
                              *                                            80808440
0A64 1 6700 0B88        DHMNR LDX   L3 DCT        SET BASIC CTRL ADDR      80808450
0A66 0 438E                   BSI   3 -114        BR TO REL CHANNEL    SC  80808460
0A67 0 C3E9                   LD    3 -23         GET CNTR                 80808470
0A68 0 83FF                   A     3 -1          ADD ONE                  80808480
0A69 0 D3E9                   STO   3 -23         SAVE NEW TOTAL           80808490
0A6A 0 F3E7                   EOR   3 -25         TEST FOR MAX 204 CNT     80808500
0A6B 1 4C18 0A97              BSC   L  DARMC,&-   BR TO MSAG IF ZERO       80808510
0A6D 0 4392                   BSI   3 -110        BR TO SENSE DSW      SC  80808520
0A6E 0 1004                   SLA     4           CHECK FOR HOME BIT       80808530
0A6F 1 4C28 0A9C              BSC   L  DARMZ,Z&   BR IF HOME BIT ON        80808540
0A71 0 70EA                   MDX     DHMLE       BR LOOP                  80808550
                              *                                            80808560
                              *          13 SD RE-ZERO ARM RTN             80808570
                              *                                            80808580
0A72 0 C30B             DRASK LD    3 11          GET DESIRED ADDR         80808590
0A73 0 D3E6                   STO   3 -26         SAVE IT                  80808600
0A74 0 4380                   BSI   3 -128        BR TO DCARM RTN          80808610
                              *                                            80808620
0A75 1 4C00 0AD2              BSC   L  DRSKX      BR TO RETURN TO USER     80808630
                              *                                            80808640
                              *                                            80808650
                              *                                         *  80808660
                              *.........................................*  80808670
                              *            SEEK ADJ CYL 089 / 111       *  80808680
                              *.........................................*  80808690
                              *                                         *  80808700
0A77 0 C30B             SKADJ LD    3 11          GET DESIRED ADDR     SE  80808710
0A78 0 930C                   S     3 12          SUB PRESENT ADDR         80808720
0A79 0 4808                   BSC     &           SKIP IF POSITIVE         80808730
0A7A 0 7003                   MDX     SKOUT       BR TO NEGATIVE RT        80808740
                              *                                            80808750
0A7B 0 C3E2                   LD    3 -30         GET CYL 111              80808760
0A7C 0 D30B                   STO   3 11          SET ADDR                 80808770
0A7D 0 7002                   MDX     SKOUT&2     BR TO BR BACK            80808780
                              *                                            80808790
0A7E 0 C3E3             SKOUT LD    3 -29         GET CYL 089              80808800
0A7F 0 D30B                   STO   3 11          SET ADDR                 80808810
0A80 1 4C00 0AB6              BSC   L  DCBPR      BR TO USER RT        SX  80808820
                              *                                            80808830
                              *.........................................*  80808840
                              *                                         *  80808850
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                        *                                         *        80808860
                        *          DISK CHECK & SW RTN A OR C     *        80808870
                        *                                         *        80808880
                        *.........................................*        80808890
0A82 0 0000             ADSKC DC      0           ENTRY                    80808900
0A83 0 0BBC                   XIO   3 -68         GET DSK DSW              80808910
0A84 0 100D                   SLA     13          CK BIT 13 FOR TYPE       80808920
0A85 1 4C90 0A82              BSC   I  ADSKC,-    BR RTRN IF DSK A 13      80808930
0A87 1 7401 0A82              MDX   L  ADSKC,1    ADV FOR RETURN           80808940
0A89 1 4CA8 0A82              BSC   I  ADSKC,Z&   BR RTRN IF DSK A 44      80808950
                              *                                         *  80808960
                              *.........................................*  80808970
                              *            FAR ARM TO HOME RT           *  80808980
                              *.........................................*  80808990
                              *                                         *  80809000
0A8B 1 4400 0A82        DCARM BSI   L  ADSKC      BR TO 13/44 DRTN     SEC 80809010
0A8D 0 70C8                   MDX      DHOME      BR TO 13 SD SECTION      80809020
                              *                                            80809030
0A8E 0 C300             DARMA LD    3 0           GET DESIRED DSK ADDR     80809040
0A8F 0 D30B                   STO   3 11          SET IT IN DCT            80809050
0A90 0 C3CF                   LD    3 -49         GET PSEUDO PRESENT       80809060
0A91 0 D30A                   STO   3 10          SET IT IN DCT            80809070
0A92 0 43AE                   BSI   3 -82         BR TO SEEK SUB RT        80809080
                              *                                            80809090
0A93 0 4392                   BSI   3 -110        BR TO SENSE DSK DSW  SC  80809100
0A94 0 1004                   SLA     4           SHIFT TO CK HOME BIT     80809110
0A95 1 4C28 0A9C              BSC   L  DARMZ,Z&   BR IF HOME BIT ON        80809120
                              *                                            80809130
0A97 0 43B1             DARMC BSI   3 -79         BR TO ERR MSAG RT    SC  80809140
                              *                                            80809150
0A98 0 432E                   BSI   3 46          BR TO MSAG FORM 1    MC  80809160
0A99 0 E003                   DC      /E003       -- MSAG # --             80809170
0A9A 1 0A8B                   DC      DCARM       ERROR LOOP ADDR          80809180
                              *                                            80809190
0A9B 0 4396                   BSI   3 -106        BR TO MONITOR END    PX  80809200
                              *                                            80809210
0A9C 1 4C80 0B08        DARMZ BSC   I  ARM        RETURN TO CALLING RT SX  80809220
                              *                                         *  80809230
                              *.........................................*  80809240
                              *          COMMON EXEQUTE I/O RT          *  80809250
                              *.........................................*  80809260
                              *                                         *  80809270
0A9E 0 438A             DEXEQ BSI   3 -118        REQUEST DEVICE       SC  80809280
                              *                                         *  80809290
                              *     ****    **   ** MAIN LINE MUST RELEASE* 80809300
                              *                                         *  80809310
0A9F 0 C3B9                   LD    3 -71         GET NTRPT TIMR ADDR      80809320
0AA0 1 D400 0809              STO   L  LIV        SET IN MLSCF TBL         80809330
                              *                                            80809340
0AA2 0 C305                   LD    3 5           GET AREA CODE            80809350
0AA3 0 EB06                   OR    3 6           SET IN FUNCTION          80809360
0AA4 0 EB07                   OR    3 7           SET IN MODIFIER          80809370
0AA5 0 1890                   SRT     16          PUT XIO IN Q REG         80809380
                              *                                            80809390
0AA6 0 C304                   LD    3 4           GET ADDR / INCREMENT     80809400
                              *                                            80809410
0AA7 0 D804                   STD     DEXIO       SET IOCC WORD            80809420
                              *                                            80809430
0AA8 0 0803                   XIO     DEXIO       DO I/O COMMAND           80809440
                              *                                            80809450
0AA9 1 4C80 0B0A              BSC   I  EXQ        EXIT RETURN          SX  80809460
                              *                                            80809470
0AAC   0002             DEXIO BSS   E  2          IOCC WORD            PM  80809480
                              *                                         *  80809490
                              *.........................................*  80809500
                              *          ADDR BYPASS CK RT              *  80809510
                              *.........................................*  80809520
                              *                                         *  80809530
0AAE 0 C30B             DCABP LD    3 11          GET DESIRED ADDR     SE  80809540
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0AAF 0 93EC            S     3 -20        SUB CYL 90                    80809540
0AB0 1 4C28 0AB6       BSC   L DCBPR,Z&   BR IF LESS THAN               80809550
                     *                                                  80809560
0AB2 0 C30B            LD    3 11         GET DESIRED ADDR              80809570
0AB3 0 93EA            S     3 -22        SUB CYL 110                   80809580
0AB4 0 4808            BSC     &          SKIP IF GREATER THAN          80809590
                     *                                                  80809600
0AB5 0 70C1            MDX     SKADJ      BR TO GET CYL &/-             80809610
                     *                                                  80809620
0AB6 1 4C80 0B0C   DCBPR BSC   I ABP      EXIT TO CALL RT       SX      80809630
                     *                                                  80809640
                     *                                        *         80809650
                     *.......................................*         80809660
                     *            FAR RESTORE ARM RT         *         80809670
                     *.......................................*         80809680
                     *                                        *         80809690
0AB8 0 4388        DRESK BSI   3 -120      BR TO DISK READY RT   SEC   80809700
0AB9 1 4400 0A82         BSI   L ADSKC     BR TO 13/44 DRTN              80809710
0ABB 0 70B6              MDX     DRASK     BR TO 13 SD SECTION           80809720
                     *                                                  80809730
0ABC 0 C30B              LD    3 11        GET DESIRED ADDR              80809740
0ABD 0 D3E6              STO   3 -26       SAVE DESIRED ADDR             80809750
0ABE 0 10A0              SLT     32        CLEAR A & Q                   80809760
0ABF 0 DB0A              STD   3 10        SET DESIRED & PRSNT           80809770
0AC0 0 D304              STO   3 4         RESET ADDR                    80809780
0AC1 0 C321        DRERT LD    3 33        GET SEEK INST                 80809790
0AC2 0 D306              STO   3 6         SET IT IN DCT                 80809800
0AC3 0 D3DF              STO   3 -33       SET IT IN MEM FNC             80809810
0AC4 0 C3B6              LD    3 -74       GET NTRPT XFER ADDR           80809820
0AC5 0 D31D              STO   3 29        SET IT IN DCT                 80809830
0AC6 0 4382              BSI   3 -126      BR TO EXEQ DSK OP     SC      80809840
0AC7 0 439C              BSI   3 -100      BR TO MONITOR START   XM      80809850
                     *                                                  80809860
0AC8 1 6700 0B88   DRSKR LDX   L3 DCT      RESET X3 CTRL ADDR    RM      80809870
0ACA 0 438E              BSI   3 -114      BR TO REL CHAN RT     SC      80809880
0ACB 0 C308              LD    3 8         GET DSW                       80809890
0ACC 0 E3C3              AND   3 -61       PASS TEST BITS                80809900
0ACD 0 F3CC              EOR   3 -52       TEST FOR OK PATTERN           80809910
0ACE 1 4C20 0C48         BSC   L RSTRT,Z   BR HOME BIT NOT ON             80809920
                     *                                                  80809930
0AD0 0 1010              SLA     16        CLEAR A REG                   80809940
0AD1 0 D3EF              STO   3 -17       RESET RETRY CNTR              80809950
0AD2 0 C3E6        DRSKX LD    3 -26       GET DESIRED ADDR              80809960
0AD3 0 D30B              STO   3 11        SET ADDR IN DCT               80809970
0AD4 1 4C80 0B0E         BSC   I RSK       RETURN TO CALLING RT  SX      80809980
                     *                                        *         80809990
                     *.......................................*         80810000
                     *          RDY-NOTBUSY-OK CK RT         *         80810010
                     *.......................................*         80810020
                     *                                        *         80810030
0AD6 0 4392        DCRDY BSI   3 -110      DCDSW RT              SEC   80810040
0AD7 0 180C              SRA     12        SHIFT FOR B0-B3               80810050
0AD8 1 4C98 0B10         BSC   I RDY,&-    EXIT                  SX      80810060
                     *                                                  80810070
0ADA 0 43B1              BSI   3 -79       BR TO ERR MSAG RT     SC      80810080
0ADB 0 432E              BSI   3 46        BR TO MSAG FORM 1     MC      80810090
0ADC 0 E002              DC      /E002     -- MSAG # --                  80810100
0ADD 0 0000              DC      0         NO ERR LOOP ADDR              80810110
0ADE 0 70F7              MDX     DCRDY     BR TO PRINT AGAIN             80810120
                     *                                        *         80810130
                     *.......................................*         80810140
                     *          CHANNEL REQUEST RT           *         80810150
                     *.......................................*         80810160
                     *                                        *         80810170
0ADF 0 4480 0131   CHNRQ BSI   I REQDV      CHANNEL REQUEST RT    SEC   80810180
0AE1 1 0A44              DC      CHNBZ     BUSY RT ADDR                  80810190
0AE2 0 0000        CHNSA DC      0         DDEF ADDR                     80810200
0AE3 1 08DD              DC      DVA       DEVICE REF ADDR               80810210
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0AE4 1 080C              DC      TERM      ADDR OF/FFFF                  80810220
0AE5 1 6700 0B88         LDX   L3 DCT      SET X3 CTRL ADDR              80810230
0AE7 1 4C80 0B12         BSC   I REQ       EXIT TO CALL RT       SX      80810240
                     *                                                  80810250
                     *                                        *         80810260
                     *.......................................*         80810270
                     *            FILL I/O AREA RT           *         80810280
                     *.......................................*         80810290
                     *                                        *         80810300
0AE9 0 6500 FEC0   DFILL LDX   L1 -320     SET PASS CTRL         SE      80810310
0AEB 1 D500 0D97         STO   L1 DCDA&322  RESET IOA WITH ACC            80810320
0AED 0 7101              MDX     1 1       DEC CTRL                      80810330
0AEE 0 70FC              MDX     DFILL&2   LOOP                          80810340
0AEF 1 4C80 0B14         BSC   I FLX       EXIT                  SX      80810350
                     *                                        *         80810360
                     *.......................................*         80810370
                     *          CHANNEL RELEASE RT           *         80810380
                     *.......................................*         80810390
                     *                                        *         80810400
0AF1 0 4480 0132   CHNRL BSI   I RELDV      CHANNEL RELEASE RT    SEC   80810410
0AF3 0 0000        CHNRA DC      0         DDEF ADDR                     80810420
0AF4 1 080C              DC      TERM      ADDR OF /FFFF                 80810430
0AF5 1 6700 0B88         LDX   L3 DCT      SET X3 CTRL ADDR              80810440
0AF7 1 4C80 0B16         BSC   I REL       EXIT TO CALL RT       SX      80810450
                     *                                        *         80810460
                     *.......................................*         80810470
                     *          DISK DELAY ROUTINE           *         80810480
                     *.......................................*         80810490
                     *                                        *         80810500
0AF9 0 71FF        DCDLA MDX     1 -1        DEC NDX -1            SE    80810510
0AFA 0 70FE              MDX     *-2       LOOP IF NOT ZERO              80810520
0AFB 0 C3C0              LD    3 -64       GET ADDR OF RETURN    SE      80810530
0AFC 1 D400 080B         STO   L MLN       SET ADDR IN MLSCF             80810540
0AFE 0 439C              BSI   3 -100      BR TO MON START       XM      80810550
0AFF 1 6700 0B88   DLABB LDX   L3 DCT      SET X3 CTRL ADDR              80810560
0B01 1 4C80 0B18         BSC   I DLA       EXIT TO CALL RT       SX      80810570
                     *                                        *         80810580
                     *.......................................*         80810590
                     *          READ DSW ROUTINE             *         80810600
                     *.......................................*         80810610
                     *                                        *         80810620
0B03 0 0BBC        DCDSW XIO     3 -68       READ DSW              SE    80810630
0B04 0 D308              STO   3 8         SAVE DSW                      80810640
0B05 1 4C80 0B1A         BSC   I DSW       RETURN TO CALL RT     SX      80810650
                     *                                        *         80810660
                     *.......................................*         80810670
                     *          X3 - COMMON XFER TABLE       *         80810680
                     *.......................................*         80810690
                     *                                        *         80810700
0B08   0000              BSS   E 0                                       80810710
0B08 0 0000        ARM   DC      0                       -128            80810720
0B09 0 7081              MDX     DCARM                         SC      80810730
                     *                                                  80810740
0B0A 0 0000        EXQ   DC      0                       -126            80810750
0B0B 0 7092              MDX     DEXEQ                         SC      80810760
                     *                                                  80810770
0B0C 0 0000        ABP   DC      0                       -124            80810780
0B0D 0 70A0              MDX     DCABP                         SC      80810790
                     *                                                  80810800
0B0E 0 0000        RSK   DC      0                       -122            80810810
0B0F 0 70A8              MDX     DRESK                         SC      80810820
                     *                                                  80810830
0B10 0 0000        RDY   DC      0                       -120            80810840
0B11 0 70C4              MDX     DCRDY                         SC      80810850
                     *                                                  80810860
0B12 0 0000        REQ   DC      0                       -118            80810870
0B13 0 70CB              MDX     CHNRQ                         SC      80810880
                     *                                                  80810890
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0B14 0 0000          FLX   DC     0                          -116      80810900
0B15 0 70D3                MDX    DFILL                        SC      80810910
                     *                                                 80810920
0B16 0 0000          REL   DC     0                          -114      80810930
0B17 0 70D9                MDX    CHNRL                        SC      80810940
                     *                                                 80810950
0B18 0 0000          DLA   DC     0                          -112      80810960
0B19 0 70DF                MDX    DCDLA                        SC      80810970
                     *                                                 80810980
0B1A 0 0000          DSW   DC     0                          -110      80810990
0B1B 0 70E7                MDX    DCDSW                        SC      80811000
                     *                                                 80811010
0B1C 0 0000          HNG   DC     0                          -108      80811020
0B1D 0 70FF                MDX    *-1                          SC      80811030
                     *                                                 80811040
0B1E 0 0000          MEND  DC     0                          -106      80811050
0B1F 0 4C80 012E           BSC  I END                          PXM      80811060
                     *                                                 80811070
0B21 0 0000                DC     0                          -103      80811080
0B22 1 4C00 0C3B           BSC  L COUNT                         SC      80811090
                     *                                                 80811100
0B24 0 0000          STRT  DC     0                          -100      80811110
0B25 0 4C80 012D           BSC  I START                         XM      80811120
                     *                                                 80811130
0B27 0 0000          RTN   DC     0                           -97      80811140
0B28 1 4C00 08A7           BSC  L DCRTN                         SC      80811150
                     *                                                 80811160
0B2A 0 0000          REST  DC     0                           -94      80811170
0B2B 1 4C00 0859           BSC  L DCTRL                         SC      80811180
                     *                                                 80811190
0B2D 0 0000          DEND  DC     0                           -91      80811200
0B2E 1 4C00 08BC           BSC  L DCEOD                         SC      80811210
                     *                                                 80811220
0B30 0 0000          DRD   DC     0                           -88      80811230
0B31 1 4C00 0936           BSC  L DCRD                          SC      80811240
                     *                                                 80811250
0B33 0 0000          DWR   DC     0                           -85      80811260
0B34 1 4C00 091A           BSC  L DCWR                          SC      80811270
                     *                                                 80811280
0B36 0 0000          DSK   DC     0                           -82      80811290
0B37 1 4C00 09EE           BSC  L DCSK                          SC      80811300
                     *                                                 80811310
0B39 0 0000          EMF   DC     0                           -79      80811320
0B3A 1 4C00 0A4A           BSC  L EMNRT                         SC      80811330
                     *                                               * 80811340
                     *.....................................*         80811350
                     *          X3 - COMMON XTNT REF TBL   *         80811360
                     *.....................................*         80811370
                     *                                               * 80811380
0B3C 1 0859                DC     DCTRL                       -76     80811390
0B3D 1 085F                DC     DCTL2                       -75     80811400
0B3E 1 0AC8                DC     DRSKR                       -74     80811410
0B3F 1 0981                DC     CDTNR                       -73     80811420
0B40 1 0A06                DC     DSKNR                       -72     80811430
0B41 1 08C1                DC     DLNRT                       -71     80811440
0B42 0 0000                DC     /0000                       -70     80811450
0B43 0 0701                DC     /0701                       -69     80811460
0B44 0 0000                DC     /0000                       -68     80811470
0B45 0 0700                DC     /0700                       -67     80811480
0B46 0 0658                DC     /0658                       -66     80811490
0B47 0 8000                DC     /8000                       -65     80811500
0B48 1 0AFF                DC     DLABB                       -64     80811510
0B49 0 0100                DC     /0100                       -63     80811520
0B4A 0 FFFF                DC     /FFFF                       -62     80811530
0B4B 0 FFF8                DC     /FFF8                       -61     80811540
0B4C 0 F0FF                DC     /F0FF                       -60     80811550
0B4D 0 F7F8                DC     /F7F8                       -59     80811560
0B4E 0 E5E5                DC     /E5E5   PATTERN ZERO        -58     80811570
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0B4F 0 CEDC          DC     /CEDC                       -57     80811580
0B50 0 0000          DC     /0000                       -56     80811590
0B51 0 0700          DC     /0700                       -55     80811600
0B52 0 7000          DC     /7000                       -54     80811610
0B53 0 6400          DC     /6400                       -53     80811620
0B54 0 4800          DC     /4800                       -52     80811630
0B55 0 4000          DC     /4000                       -51     80811640
0B56 0 0000          DC     /0000                       -50     80811650
0B57 0 0657          DC     /0657   MAX DISK ADDR       -49     80811660
0B58 0 1313          DC     /1313   PATTERN ONE         -48     80811670
0B59 0 1000          DC     /1000   NOP INST            -47     80811680
0B5A 0 0000          DC     /0000   BIT PATTERN         -46     80811690
0B5B 0 07D0          DC     /07D0   TIME CONSTANT        -45     80811700
0B5C 0 0000          DC     0       DISK ADDRESSES      -44     80811710
0B5D 0 0000          DC     0       DISK ADDRESSES      -43     80811720
0B5E 0 0000          DC     0       DISK ADDRESSES      -42     80811730
0B5F 0 0000          DC     0       DISK ADDRESSES      -41     80811740
0B60 0 0000          DC     0       DISK ADDRESSES      -40     80811750
0B61 0 0000          DC     0       DISK ADDRESSES      -39     80811760
0B62 0 0000          DC     0       DISK ADDRESSES      -38     80811770
0B63 0 0000          DC     0       DISK ADDRESSES      -37     80811780
0B64 0 0000          DC     0       DISK WORK AREA      -36     80811790
0B65 0 0000          DC     0       DISK WORK AREA      -35     80811800
0B66 0 0000          DC     0       DISK WORK AREA      -34     80811810
0B67 0 0000          DC     0       DISK WORK AREA      -33     80811820
0B68 0 0000          DC     0       DISK WORK AREA      -32     80811830
0B69 0 0000          DC     0       DLA XTNT HLDR       -31     80811840
0B6A 0 0378          DC     /0378                       -30     80811850
0B6B 0 02CF          DC     /02CF                       -29     80811860
0B6C 0 0000          DC     0                           -28     80811870
0B6D 0 0141          DC     321                         -27     80811880
0B6E 0 0000          DC     0                           -26     80811890
0B6F 0 00CC          DC     204                         -25     80811900
0B70 0 00C8          DC     200                         -24     80811910
0B71 0 0000          DC     0                           -23     80811920
0B72 0 0377          DC     /0377                       -22     80811930
0B73 0 0000          DC     0                           -21     80811940
0B74 0 02D0          DC     /02D0                       -20     80811950
0B75 0 0018          DC     24                          -19     80811960
0B76 0 0000          DC     0                           -18     80811970
0B77 0 0000          DC     0                           -17     80811980
0B78 0 0010          DC     16                          -16     80811990
0B79 0 000F          DC     15                          -15     80812000
0B7A 0 000E          DC     14                          -14     80812010
0B7B 0 000D          DC     13                          -13     80812020
0B7C 0 000C          DC     12                          -12     80812030
0B7D 0 000B          DC     11                          -11     80812040
0B7E 0 000A          DC     10                          -10     80812050
0B7F 0 0009          DC     9                            -9     80812060
0B80 0 0008          DC     8                            -8     80812070
0B81 0 0007          DC     7                            -7     80812080
0B82 0 0006          DC     6                            -6     80812090
0B83 0 0005          DC     5                            -5     80812100
0B84 0 0004          DC     4                            -4     80812110
0B85 0 0003          DC     3                            -3     80812120
0B86 0 0002          DC     2                            -2     80812130
0B87 0 0001          DC     1                            -1     80812140
                     *                                   *      80812150
                     *.....................................*     80812160
                     *          X3 - DISK CTRL TABLE       *     80812170
                     *.....................................*     80812180
                     *                                   *      80812190
0B88 0 0000          DCT   DC     /0000   ZERO CONSTANT       0  80812200
0B89 1 0C55                DC     DCDA    READ DATA AREA FLD  1  80812210
0B8A 0 0000                DC     0       SEEK INCR CALC HLD  2  80812220
0B8B 0 0000                DC     0       SK - WR - RD SWCTL  3  80812230
0B8C 0 0000                DC     0       I/O AREA / CYL INC  4  80812240
0B8D 0 0000                DC     0       AREA CODE           5  80812250
```

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0B8E 0 0000          DC    0          FUNCTION          6    80812260
0B8F 0 0000          DC    0          MODIFIER          7    80812270
0B90 0 0000          DC    0          LAST DSW READ     8    80812280
0B91 0 0000          DC    0          LAST GOOD CYL READ 9   80812290
0B92 0 0000          DC    0          PRESENT CYL       10   80812300
0B93 0 0000          DC    0          DESIRED CYL HDDR  11   80812310
0B94 0 0000          DC    0          ACTUAL ADDR READ  12   80812320
0B95 0 0000          DC    0          CURRENT WORD CNT  13   80812330
0B96 0 0000          DC    0          RD-WR ERR TRY CTR 14   80812340
0B97 0 0000          DC    0          SEEK ERR TRY CTR  15   80812350
0B98 0 0000          DC    0          TOTAL SEEKS       16   80812360
0B99 0 0000          DC    0          TOTAL WRITES      17   80812370
0B9A 0 0000          DC    0          TOTAL READS       18   80812380
0B9B 0 0000          DC    0          TOTAL SEEK ERRORS 19   80812390
0B9C 0 0000          DC    0          TOT SFT WR ERRORS 20   80812400
0B9D 0 0000          DC    0          TOT HRD WR ERRORS 21   80812410
0B9E 0 0000          DC    0          TOT SFT RD ERRORS 22   80812420
0B9F 0 0000          DC    0          TOT HRD RD ERRORS 23   80812430
0BA0 0 0000          DC    0          TOT PROG PASSES   24   80812440
0BA1 0 0000          DC    0          ROUTINE EXEQ NUM  25   80812450
0BA2 0 0000          DC    0          RD-RDCK MODE CODE 26   80812460
0BA3 0 0000          DC    0          LOST TIME DLA CTR 27   80812470
0BA4 0 0FFF          DC    /0FFF      LOST TIME DLA XNT 28   80812480
0BA5 0 0000          DC    0          NTRUPT RTRN ADDR  29   80812490
0BA6 0 0000          DC    0          WD NUM OF PAT ERR 30   80812500
0BA7 0 0000          DC    0          DESIRED PATTERN   31   80812510
0BA8 0 0000          DC    0          ACTUAL PATTERN    32   80812520
0BA9 0 0400          DC    /0400      DIRECT ACCESS SK  33   80812530
0BAA 0 0404          DC    /0404      SEEK OUT          34   80812540
0BAB 0 0500          DC    /0500      DISK WRITE DATA   35   80812550
0BAC 0 0600          DC    /0600      DISK READ DATA    36   80812560
0BAD 0 0608          DC    /0608      DISK READ CHECK   37   80812570
0BAE 0 0700          DC    /0700      DISK SENSE NORSET 38   80812580
0BAF 0 0701          DC    /0701      DISK SENSE RESET  39   80812590
                     *                                       80812600
                     *.....................................* 80812610
                     *          X3 - MSAG REF TBL          * 80812620
                     *.....................................* 80812630
                     *                                     * 80812640
                     *                                     * 80812650
                     *.....................................* 80812660
                     *          MSAG FORMAT ROUTINE        * 80812670
                     *.....................................* 80812680
                     *                                     * 80812690
                     *                                       80812700
0BB0 0 0000          FORM0 DC    0          SAVE ENTRY ADDR   SE 80812710
0BB1 1 6580 0BB0           LDX  I1 FORM0    SAVE ADDR FOR RTRN    80812720
0BB3 0 C300                LD   3 0         GET WORD COUNT        80812730
0BB4 0 D07C                STO    DCOUT     PUT IT IN MSAG OPA    80812740
0BB5 0 704D                MDX    DCOSW     BRNCH TO OUTPUT CALL  80812750
                     *                                           80812760
0BB6 0 0000          FORM1 DC    0          SAVE ENTRY ADDR   SE 80812770
0BB7 1 6580 0BB6           LDX  I1 FORM1    SAVE ADDR FOR RTRN    80812780
0BB9 0 C3FF                LD   3 -1        GET WORD COUNT        80812790
0BBA 0 D076                STO    DCOUT     PUT IT IN MSAG OPA    80812800
0BBB 0 700D                MDX    DCFMB     BR TO FINISH SETUP    80812810
                     *                                           80812820
0BBC 0 0000          FORM2 DC    0          SAVE ENTRY ADDR   SE 80812830
0BBD 1 6580 0BBC           LDX  I1 FORM2    SAVE ADDR FOR RTRN    80812840
0BBF 0 C3FB                LD   3 -5        GET WORD COUNT        80812850
0BC0 0 D070                STO    DCOUT     PUT IT IN MSAG OPA    80812860
0BC1 0 C302                LD   3 2         GET TRACK SEEK CNT    80812870
0BC2 0 D075                STO    DCOUT&7   SET CNT IN MODIFIER   80812880
0BC3 0 C30C          DCFMA LD   3 12        FOUND CYL & SECT      80812890
0BC4 0 D072                STO    DCOUT&6   SET CYL IN MODIFIER   80812900
0BC5 0 C308                LD   3 11        DESIRED CYL & SECT    80812910
0BC6 0 D06F                STO    DCOUT&5   SET CYL IN MODIFIER   80812920
0BC7 0 C309                LD   3 9         LAST CYL AND SECT     80812930
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0BC8 0 D06C                STO    DCOUT&4   SET CYL IN MODIFIER   80812940
0BC9 0 C308          DCFMB LD   3 8         LAST DSW              80812950
0BCA 0 D069                STO    DCOUT&3   SET DSW IN MODIFIER   80812960
0BCB 0 7037                MDX    DCOSW     BRNCH TO OUTPUT CALL  80812970
                     *                                           80812980
0BCC 0 0000          FORM3 DC    0          SAVE ENTRY ADDR   SE 80812990
0BCD 1 6580 0BCC           LDX  I1 FORM3    SAVE ADDR FOR RTRN    80813000
0BCF 0 C3F9                LD   3 -7        GET WORD COUNT        80813010
0BD0 0 D060                STO    DCOUT     PUT IT IN MSAG OPA    80813020
0BD1 0 C31E                LD   3 30        WC OF ERROR DATA      80813030
0BD2 0 D065                STO    DCOUT&7   SET WEC IN MODIFIER   80813040
0BD3 0 C31F                LD   3 31        EXPECTED WORD         80813050
0BD4 0 D064                STO    DCOUT&8   SET EXP IN MODIFIER   80813060
0BD5 0 C320                LD   3 32        ACTUAL WORD           80813070
0BD6 0 D063                STO    DCOUT&9   SET ACT IN MODIFIER   80813080
0BD7 0 70EB                MDX    DCFMA     BR TO FINISH SETUP    80813090
                     *                                           80813100
0BD8 0 0000          FORM4 DC    0          SAVE ENTRY ADDR   SE 80813110
0BD9 1 6580 0BD8           LDX  I1 FORM4    SAVE ADDR FOR RTRN    80813120
0BDB 0 C3FD                LD   3 -3        GET WORD COUNT        80813130
0BDC 0 D054                STO    DCOUT     PUT IT IN MSAG OPA    80813140
0BDD 0 C3CB                LD   3 -53       GET BR INST           80813150
0BDE 0 D049                STO    DCELS     PUT IN NOP / BR INST  80813160
0BDF 0 C318                LD   3 24        PROG. EXECUTITIONS    80813170
0BE0 0 D053                STO    DCOUT&3   MODIFIER NO. 1        80813180
0BE1 0 C310                LD   3 16        TOTAL SEEKS           80813190
0BE2 0 D052                STO    DCOUT&4   MODIFIER NO. 2        80813200
0BE3 0 C313                LD   3 19        SEEK ERRORS           80813210
0BE4 0 D051                STO    DCOUT&5   MODIFIER NO. 3        80813220
0BE5 1 6600 0BE9           LDX  L2 FRM4A    GET ALTERNATE RETURN  80813230
0BE7 0 6A41                STX    2 DCELS&1 PUT IN ADDRESS        80813240
0BE8 0 701A                MDX    DCOSW     BRNCH TO OUTPUT CALL  80813250
0BE9 0 C047          FRM4A LD    DCOUT      LINE NO. & WORD CT.   80813260
0BEA 0 83C1                A    3 -63       INCREMENT LINE NO.    80813270
0BEB 0 D045                STO    DCOUT                         80813280
0BEC 0 C311                LD   3 17        TOTAL WRITES          80813290
0BED 0 D046                STO    DCOUT&3   MODIFIER NO. 1        80813300
0BEE 0 C314                LD   3 20        SOFT WRITE ERRORS     80813310
0BEF 0 D045                STO    DCOUT&4   MODIFIER NO. 2        80813320
0BF0 0 C315                LD   3 21        HARD WRITE ERRORS     80813330
0BF1 0 D044                STO    DCOUT&5   MODIFIER NO. 3        80813340
0BF2 1 6600 0BF6           LDX  L2 FRM4B    GET ALTERNATE RETURN  80813350
0BF4 0 6A34                STX    2 DCELS&1 PUT IN ADDRESS        80813360
0BF5 0 7021                MDX    DCLGX     BRNCH TO OUTPUT CALL  80813370
0BF6 0 C03A          FRM4B LD    DCOUT      LINE NO. & WORD CT.   80813380
0BF7 0 83C1                A    3 -63       INCREMENT LINE NO.    80813390
0BF8 0 D038                STO    DCOUT                         80813400
0BF9 0 C312                LD   3 18        TOTAL READS           80813410
0BFA 0 D039                STO    DCOUT&3   MODIFIER NO. 1        80813420
0BFB 0 C316                LD   3 22        SOFT READ ERRORS      80813430
0BFC 0 D038                STO    DCOUT&4   MODIFIER NO. 2        80813440
0BFD 0 C317                LD   3 23        HARD READ ERRORS      80813450
0BFE 0 D037                STO    DCOUT&5   MODIFIER NO. 3        80813460
0BFF 0 C3D1                LD   3 -47       GET NOP INST          80813470
0C00 0 D027                STO    DCELS     RESET TO NOP          80813480
0C01 0 D027                STO    DCELS&1   RESET TO NOP          80813490
0C02 0 7014                MDX    DCLGX     BRNCH TO OUTPUT CALL  80813500
                     *                                           80813510
                     *.....................................* 80813520
                     *                                     * 80813530
                     *          SET UP OUTPUT AREA         * 80813540
                     *                                     * 80813550
                     *.....................................* 80813560
0C03 0 C100          DCOSW LD    1 0        GET MASG CODE #       80813570
0C04 0 D02E                STO    DCOUT&2   PUT MSAG # IN TBL     80813580
0C05 0 180C                SRA    12        SHIFT FOR LOG CK      80813590
0C06 0 F3F2                EOR  3 -14       TEST FOR ERR IND      80813600
0C07 1 4C20 0C16           BSC  L DCLGC,Z   BR TO LOG CALL RT     80813610
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0C09 0 7101                MDX   1 1          ADD TO ADDR CTRL                80813620
0C0A 0 C100                LD    1 0          GET ERROR ADDR                  80813630
0C0B 0 D005                STO     DCERC&4    PUT IT IN CALL RT               80813640
0C0C 0 6923                STX   1 DCELX      SAVE X1                         80813650
                           ********************************************      80813660
0C0D 0 4480 0130 DCERC BSI  I  ERROR          MONITOR ERROR RT   * SC         80813670
0C0F 1 0C31                DC     DCOUT       OUTPUT ADDR        *            80813680
0C10 1 0C13                DC     DCBSY       BUSY ROUTINE  ERR  *            80813690
0C11 0 0000                DC     0           ERROR LOOP         * PM         80813700
                           ********************************************      80813710
0C12 0 700A                MDX    DCEC                                        80813720
                           *                                                  80813730
0C13 1 6600 0C0D DCBSY LDX  L2 DCERC          GET BUSY RETURN ERR             80813740
0C15 0 700C                MDX    DCBZR       BR TO SETUP RETURN              80813750
                           *                                                  80813760
0C16 0 6919      DCLGC STX   1 DCELX          SAVE X1                         80813770
                           ********************************************      80813780
0C17 0 4480 012F DCLGX BSI  I  LOG            MONITOR LOG ROUT   * SC         80813790
0C19 1 0C31                DC     DCOUT       OUTPUT ADDR        *            80813800
0C1A 1 0C20                DC     DCBZY       BUSY ROUTINE LOG   *            80813810
0C1B 1 0C26                DC     DCLR        HOLD DURING OUTPUT *            80813820
                           ********************************************      80813830
0C1C 0 7007                MDX    DCBZR&2     BR TO START EXIT                80813840
0C1D 1 6600 0C26 DCEC  LDX  L2 DCLR                                           80813850
0C1F 0 7002                MDX    DCBZR                                       80813860
                           *                                                  80813870
0C20 1 6600 0C17 DCBZY LDX  L2 DCLGX          GET BUSY RETURN LOG             80813880
0C22 1 6E00 080B DCBZR STX  L2 MLN            BUSY RETURN SETUP               80813890
                           *                                                  80813900
                           ********************************************      80813910
0C24 0 4C80 012D           BSC  I  START      ENTER MONITOR      * XM         80813920
                           ********************************************      80813930
                           *                                                  80813940
0C26 1 6700 0B88 DCLR  LDX  L3 DCT            RESET X3 TO DCT ADDR SE         80813950
0C28 0 1000      DCELS SLA     0              NOP / BR INST        PM         80813960
0C29 0 1000                SLA     0          NOP / BR ADDR WORD   PM         80813970
0C2A 1 6580 0C30           LDX   I1 DCELX     GET SAVED X1                    80813980
0C2C 0 1010                SLA     16         CLEAR ACC                       80813990
0C2D 0 D003                STO     DCOUT      CLEAR TW OPA FST WD             80814000
0C2E 0 4D00 0001 DCRMB BSC  L1 1              RETURN  TO ENTRY RT  SX         80814010
                           *                                                  80814020
0C30 0 0000      DCELX DC      0              X1 SAVE  AREA                   80814030
                           *                                    *             80814040
                           *.....................................*            80814050
                           *                OUTPUT AREA         *            80814060
                           *.....................................*            80814070
                           *                                    *            80814080
0C31 0 0000      DCOUT DC      0              BO HOLD 1-7 LINE  WC            80814090
0C32 0 0000                DC      0          BO DEC IND                      80814100
0C33 0 0000                DC      0          MESSAGE ID                      80814110
0C34 0 0000                DC      0          MODIFIER NO. 1                  80814120
0C35 0 0000                DC      0                       2                  80814130
0C36 0 0000                DC      0                       3                  80814140
0C37 0 0000                DC      0                       4                  80814150
0C38 0 0000                DC      0                       5                  80814160
0C39 0 0000                DC      0                       6                  80814170
0C3A 0 0000                DC      0                       7                  80814180
                           *.....................................*            80814190
                           *                                    *            80814200
                           *          ACCESS INOP  RETRY RTNS   *            80814210
                           *                                    *            80814220
                           *.....................................*            80814230
0C3B 0 C3EE      COUNT LD      3 -18          GET COUNT            SE         80814240
0C3C 0 83FF                A     3 -1         ADD ONE                         80814250
0C3D 0 D3EE                STO   3 -18        SAVE NEW TOTAL                  80814260
0C3E 0 F3E8                EOR   3 -24        TEST FOR 200 RETRIES            80814270
0C3F 1 4C20 0A0E           BSC   L  DSKCR,Z   BR IF NOT MAX                   80814280
0C41 0 10A0                SLT     32         CLR A & Q REG                   80814290
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0C42 0 D3EE                STO   3 -18        RESET COUNTER                   80814300
0C43 1 D400 0809  CNTND STO   L  LIV          CLEAR                           80814310
0C45 1 DC00 080A           STD   L  XNR       MLSCF                           80814320
0C47 0 439C                BSI   3 -100       BR TO MON - NO ENTRY PX         80814330
                           *                                    *            80814340
                           *          MESSAGE & RETRY ROUTINE   *            80814350
                           *                                    *            80814360
0C48 0 43B1      RSTRT BSI   3 -79            SET FNC IN MSAG      SEC       80814370
0C49 0 432E                BSI   3 46         BR TO MSAG FORM 1    MC        80814380
0C4A 0 E00A                DC      /E00A      -- MSAG # --                    80814390
0C4B 0 0000                DC      0          NO ERROR LOOP ADDR              80814400
                           *                                                  80814410
0C4C 0 C3EF                LD    3 -17        GET COUNT                       80814420
0C4D 0 83FF                A     3 -1         ADD ONE                         80814430
0C4E 0 D3EF                STO   3 -17        SAVE NEW TOTAL                  80814440
0C4F 0 F3F0                EOR   3 -16        TEST FOR 16                     80814450
0C50 1 4C20 0AC1           BSC   L  DRERT,Z   BR IF NOT MAX                   80814460
0C52 0 10A0                SLT     32         CLR A & Q REG                   80814470
0C53 0 D3EF                STO   3 -17        RESET COUNTER                   80814480
0C54 0 70EE                MDX     CNTND      BR TO END PGM                   80814490
                           *                                    *            80814500
                           *.....................................*            80814510
                           *              DISK IOCC AND CE HIST  *            80814520
                           *.....................................*            80814530
                           *                                    *            80814540
0C55 0 0000      DCDA  DC      0              WORD COUNT                      80814550
0C56 0 0000                DC      0          DATA FIRST WORD                 80814560
0C57   0140                BSS     320        REMAINING AREA                  80814570
                           *                                                  80814580
0D97 0 FFFF      DCE   DC      /FFFF          DISK HISTORY DATA               80814590
0D98 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814600
0D99 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814610
0D9A 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814620
0D9B 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814630
0D9C 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814640
0D9D 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814650
0D9E 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814660
0D9F 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814670
0DA0 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814680
0DA1 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814690
0DA2 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814700
0DA3 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814710
0DA4 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814720
0DA5 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814730
0DA6 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814740
0DA7 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814750
0DA8 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814760
0DA9 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814770
0DAA 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814780
0DAB 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814790
0DAC 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814800
0DAD 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814810
0DAE 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814820
0DAF 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814830
0DB0 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814840
0DB1 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814850
0DB2 0 FFFF                DC      /FFFF      DISK HISTORY DATA               80814860
                           *                                                  80814870
                           ##########################################       80814880
                           ******************************************       80814890
                           *                                    *            80814900
                           *          ** START INITIALIZATION ** *            80814910
                           *                                    *            80814920
                           ******************************************       80814930
                           ##########################################       80814940
                           *                                                  80814950
                           *.....................................*            80814960
                           *                                    *            80814970
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```
                        *                  BEGIN RT F01 WR ADDR-PAT *          80814980
                        *                                           *          80814990
                        *...........................................*          80815000
0DB3 0 C3E5             F01AA LD    3 -27       GET WORD COUNT          SE     80815010
0DB4 0 D30D                   STO   3 13        SET WORD COUNT                 80815020
0DB5 0 C300                   LD    3 0         CLR ACC                        80815030
0DB6 1 D400 0EA4              STO   L CYLEX     CLR CTR                        80815040
0DB8 1 D400 0DD9              STO   L CYLEC     CLR CTR                        80815050
0DBA 0 C300                   LD    3 0         DESIRED CYLINDER AND           80815060
0DBB 0 D30B                   STO   3 11        SECTOR SET TO 000              80815070
                        *...........................................*          80815080
                        *                                           *          80815090
                        *                SELECTION OF NEXT SECTOR   *          80815100
                        *                                           *          80815110
                        *...........................................*          80815120
0DBC 0 4384             F01AB BSI   3 -124      BR TO CK BYPASS CYL     SC     80815130
0DBD 0 43AE             F01SK BSI   3 -82       SEEK NEXT SECTOR        SC     80815140
0DBE 1 4C00 0EA5              BSC   L PATRT     BR TO SETUP PATTERN            80815150
0DC0 0 43A8             F01WR BSI   3 -85       WRITE SECTOR ID         SC     80815160
0DC1 0 700E                   MDX     F01AE     ERROR RETURN ADDRESS           80815170
                        *...........................................*          80815180
                        *                                           *          80815190
                        *                IF ID IS OK, GEN NEW       *          80815200
                        *                SECTOR ADDRESS AND         *          80815210
                        *                CONTINUE TEST              *          80815220
                        *...........................................*          80815230
0DC2 0 43A8             F01RD BSI   3 -88       BR TO RD RT             SC     80815240
0DC3 0 7010                   MDX     F01AF     RD ERR RETURN                  80815250
                        *                                                      80815260
0DC4 1 7401 0B93        F01AC MDX   L DCT&11,1  INCREMENT SECTOR ADR            80815270
0DC6 0 C3BE                   LD    3 -66       GET DISK MAX CTRL              80815280
0DC7 0 F30B                   EOR   3 11        TEST CURRENT ADDR              80815290
0DC8 0 4820                   BSC     Z         BR OUT IF ZERO                 80815300
0DC9 0 70F2                   MDX     F01AB     CONTINUE TEST                  80815310
                        *                                                      80815320
0DCA 0 C3D1                   LD    3 -47       GET NOP INST                   80815330
0DCB 1 D400 091A              STO   L DCWR      SET BR/NOP SW TO NOP           80815340
0DCD 1 D400 0936              STO   L DCRD      SET BR/NOP SW TO NOP           80815350
                        *                                                      80815360
0DCF 0 439F                   BSI   3 -97       BR TO DCRTN             SC     80815370
                        *...........................................*          80815380
                        *                                           *          80815390
                        *                ERR ANALYSISS & LOGGING    *          80815400
                        *                                           *          80815410
                        *...........................................*          80815420
0DD0 0 4334             F01AE BSI   3 52       BR TO MSAG FORM 2       MC     80815430
0DD1 0 E060                   DC    /E060       -- MSAG # --                   80815440
0DD2 1 0DC0                   DC    F01WR       ERROR LOOP RE-WRITE            80815450
0DD3 0 70EE                   MDX   F01RD       BR TO RD CK                    80815460
                        *                                                      80815470
0DD4 0 4334             F01AF BSI   3 52       BR TO MSAG FORM 2       MC     80815480
0DD5 0 E061                   DC    /E061       -- MSAG # --                   80815490
0DD6 1 0DC2                   DC    F01RD       ERR LOOP ADDR                  80815500
0DD7 0 4002                   BSI   CETRT       BR TO CYL ERR TBL RT    SC     80815510
0DD8 0 70EB                   MDX   F01AC       BR TO CONTINUE                 80815520
                        *...........................................*          80815530
                        *                                           *          80815540
                        *                ERROR CONTROL ROUTINE      *          80815550
                        *                                           *          80815560
                        *...........................................*          80815570
0DD9 0 0000             CYLEC DC      0         CYL ERR CTR                    80815580
                        *                                                      80815590
0DDA 0 0000             CETRT DC      0         SAVE ENTRY                     80815600
0DDB 0 C0FD                   LD      CYLEC     TEST                    SE     80815610
0DDC 0 F3FD                   EOR   3 -3        FOR                            80815620
0DDD 1 4C18 0DF9              BSC   L DSKNG,&-  MAX ERR TEST                   80815630
0DDF 1 7401 0DD9              MDX   L CYLEC,1   CNT                            80815640
                        *                                                      80815650
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0DE1 1 C400 0EA4        CKCET LD    L CYLEX     GET ERR CNT                    80815660
0DE3 0 4820                   BSC     Z         SKIP IF ZERO                   80815670
0DE4 0 7002                   MDX     *&2       BR TO SET ERR CTRL             80815680
0DE5 0 6100                   LDX   1 0         SET CNT TO ZERO                80815690
0DE6 0 7002                   MDX     *&2       BR TO SETUP RT                 80815700
0DE7 1 6580 0EA4              LDX   I1 CYLEX    SET IN ERR CTRL CNT            80815710
                        *                                                      80815720
0DE9 0 6208             SETUP LDX   2 8         SET X3 CTRL TO 8               80815730
0DEA 0 C30B                   LD    3 11        GET INITIAL ADDR               80815740
0DEB 0 1803                   SRA   3           CLR HD/SECT                    80815750
0DEC 0 1003                   SLA   3           CLR HD/SECT                    80815760
0DED 1 D500 0EB8        CSADR STO   L1 CYLET    PUT SECT ADDR IN CET           80815770
0DEF 0 7101                   MDX   1 1         ADV CYL ERR TBL CTRL           80815780
0DF0 0 83FF                   A     3 -1        ADV SECT ADDR                  80815790
0DF1 0 72FF                   MDX   2 -1        DEC ADDR C-S CTRL              80815800
0DF2 0 70FA                   MDX     CSADR     BR TO LOOP                     80815810
0DF3 0 93FF                   S     3 -1        RE-ADJ ADDR CTRLS              80815820
0DF4 0 D30B                   STO   3 11        SET IN PROPER ADDR             80815830
0DF5 1 7408 0EA4              MDX   L CYLEX,8   INCREMENT ERR CNTR             80815840
0DF7 1 4C80 0DDA              BSC   I CETRT     RETURN TO CALL RT       SX     80815850
                        *                                           *          80815860
                        *...........................................*          80815870
                        *                SET BAD PACK ERR SWITCH    *          80815880
                        *                                           *          80815890
                        *...........................................*          80815900
0DF9 0 C3D1             DSKNG LD    3 -47       GET NOP INST            SE     80815910
0DFA 1 D400 0E63              STO   L DNGSW     SET BR INST TO NOP             80815920
0DFC 0 70E4                   MDX     CKCET     BR TO SETUP             SX     80815930
                        *                                                      80815940
                        *                                                      80815950
                        *                CE DATA ERR ROUT                      80815960
                        *                                                      80815970
0DFD 0 0000             CETYP DC      0         SAVE ENTRY                     80815980
0DFE 0 4334                   BSI   3 52        BR TO MSAG FORM 2       MC     80815990
0DFF 0 E0CE                   DC    /E0CE       -- MSAG # --                   80816000
0E00 0 0000                   DC    0           NO ERR LOOP ADDR               80816010
0E01 1 4C80 0DFD              BSC   I CETYP     RETURN TO MAIN LINE            80816020
                        *                                                      80816030
0E03 0 40F9             CESX3 BSI     CETYP     BR TO TYPE ERR MSAG            80816040
0E04 0 705E                   MDX     DNGSW     BR TO CONTINUE                 80816050
                        *                                                      80816060
0E05 0 40F7             CESX7 BSI     CETYP     BR TO TYPE ERR MSAG            80816070
0E06 0 7048                   MDX     CEXA7     BR TO CONTINUE                 80816080
                        *...........................................*          80816090
                        *                                           *          80816100
                        *                BEGIN ROUTINE 2            *          80816110
                        *                                           *          80816120
                        *...........................................*          80816130
0E07 0 C3FF             F02AA LD    3 -1        SET WORD COUNT FOR      TE     80816140
0E08 0 D30D                   STO   3 13        READ TO 001                    80816150
0E09 0 C3CF                   LD    3 -49       DESIRED CYLINDER ADR           80816160
0E0A 0 D30B                   STO   3 11        SECTOR SET TO 000              80816170
0E0B 0 6500 05B0              LDX   L1 1456     NUMBER OF SECTORS              80816180
                        *...........................................*          80816190
                        *                                           *          80816200
                        *                SELECTION OF NEXT SECTOR   *          80816210
0                       *                                           *          80816220
                        *...........................................*          80816230
0E0D 0 6923             F02AB STX   1 F02XB     SAVE X1 XTANT                  80816240
0E0E 0 4384                   BSI   3 -124      DCABP RT                SC     80816250
0E0F 0 43AE             F02SK BSI   3 -82       DCSK RT                 SC     80816260
0E10 0 43A8                   BSI   3 -88       DCRD RT                 SC     80816270
0E11 0 7008                   MDX     F02AD     ERROR RETURN ADDRESS           80816280
                        *...........................................*          80816290
                        *                                           *          80816300
                        *                IF ID IS OK, GEN NEW       *          80816310
                        *                SECTOR ADDRESS AND         *          80816320
                        *                CONTINUE TEST              *          80816330
```

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                        *                                       *          80816340
                        *.....................................*          80816350
0E12 1 74FF 0B93  F02AC MDX  L  DCT&11,-1  DECREMENT SECTOR ADR          80816360
0E14 0 1000             NOP      0         SAFTY NOP                    80816370
0E15 1 6580 0E31        LDX   I1 F02XB     GET X1 XTANT                 80816380
0E17 0 71FF             MDX    1 -1        DECREMENT XR1 BY 1           80816390
0E18 0 70F4             MDX      F02AB     CONTINUE TEST                80816400
0E19 0 439F             BSI    3 -97       DCRTN RT                SX   80816410
                        *.....................................*          80816420
                        *                                     *          80816430
                        *          ERR ANALYSISS & LOGGING    *          80816440
                        *                                     *          80816450
                        *.....................................*          80816460
0E1A 0 C30B       F02AD LD     3 11        GET DESIRED ADDR             80816470
0E1B 0 F30C             EOR    3 12        CMP WITH ACTUAL              80816480
0E1C 0 1803             SRA      3         CLR  SECTOR/HEAD             80816490
0E1D 1 4C20 0E25        BSC  L   F02AE,Z   BR IF CYL NOT EQ              80816500
                        *                                              80816510
0E1F 0 C30B             LD     3 11        GET DESIRED ADDR             80816520
0E20 0 F30C             EOR    3 12        CMP WITH ACTUAL              80816530
0E21 0 100C             SLA      12        CLR CYLINDER ADDR            80816540
0E22 1 4C20 0E29        BSC  L   F02AF,Z   BR IF SECT/HD NOT EQ          80816550
0E24 0 70ED             MDX      F02AC     FALSE ERR CONTINUE           80816560
                        *                                              80816570
0E25 0 4386       F02AE BSI    3 -122      DRESK RT                SC   80816580
0E26 0 43A8             BSI    3 -88       DCRD RT                 SC   80816590
0E27 0 7005             MDX      F02AG     ERR RD RETURN                80816600
0E28 0 43A2             BSI    3 -94       RESTART EXIT            SX   80816610
                        *                                              80816620
0E29 0 4334       F02AF BSI    3 52        BR TO MSAG FORM 2       MC   80816630
0E2A 0 E020             DC       /E020     -- MSAG # --                 80816640
0E2B 1 0E0F             DC       F02SK     LOOP ON ERR                  80816650
0E2C 0 43A2             BSI    3 -94       RESTART EXIT            SX   80816660
                        *                                              80816670
0E2D 0 4334       F02AG BSI    3 52        BR TO MSAG FORM 2       MC   80816680
0E2E 0 E021             DC       /E021     -- MSAG # --                 80816690
0E2F 0 0000             DC       0         NO ERR LOOP ADDR             80816700
0E30 0 43A2             BSI    3 -94       RESTART EXIT            SX   80816710
                        *                                              80816720
0E31 0 0000       F02XB DC       0         X1 XTANT HOLDER              80816730
                        *                                              80816740
                        *                                              80816750
                        *.....................................*          80816760
                        *                                     *          80816770
                        *          ROUTINE 3 WR CE SECTORS    *          80816780
                        *                                     *          80816790
                        *.....................................*          80816800
0E32 0 4388       F03AA BSI    3 -120      RDY NBSY RT             SEC  80816810
0E33 0 4380       F03AB BSI    3 -128      DCARM RT                SC   80816820
                        *                                              80816830
0E34 0 C3D8       F03AC LD     3 -40       GET DISK ADDR                80816840
0E35 0 D30B             STO    3 11        SET ADDR                     80816850
0E36 0 C3E5             LD     3 -27       GET WC                       80816860
0E37 0 D30D             STO    3 13        SET WC                       80816870
0E38 0 43AE             BSI    3 -82       SEEK CYL                SC   80816880
                        *                                              80816890
                        *          CE SECT 7 SETUP                     80816900
                        *                                              80816910
0E39 0 C3D0             LD     3 -48       GET 1313 PATTERN             80816920
0E3A 0 438C             BSI    3 -116      DFILL RT                SC   80816930
0E3B 1 C400 0EA4        LD   L CYLEX       GET ERR AMT                  80816940
0E3D 1 4C18 0E41        BSC  L F03XY,&-    BR NO ERR CNT                80816950
0E3F 1 4400 0E99        BSI  L FIOAX       BR TO SET ERR IN IOA         80816960
                        *                                              80816970
0E41 0 C3F9       F03XY LD     3 -7        GET SECTOR ADDR              80816980
0E42 0 EBD8             OR     3 -40       OR IN ADDR OF CYL            80816990
0E43 0 D30B             STO    3 11        SET IN SECT-CYL ADDR         80817000
                        *                                              80817010
```



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0E44 0 C3C7             LD     3 -57       GET CE ID -- CEDC--          80817020
0E45 1 D400 0C57        STO  L DCDA&2      SET IN IOA                   80817030
                        *                                              80817040
0E47 1 C400 0EA4        LD   L CYLEX       GET ERR AMT                  80817050
0E49 1 D400 0C58        STO  L DCDA&3      SET IN IOA                   80817060
                        *                                              80817070
0E4B 0 C3E5             LD     3 -27       GET WC                       80817080
0E4C 0 D30D             STO    3 13        PUT IN DCT TBL               80817090
                        *                                              80817100
0E4D 0 43AB             BSI    3 -85       WR CE SECT SEVEN        SC   80817110
0E4E 0 70B6             MDX      CESX7     BR TO ERR ROUT               80817120
                        *                                              80817130
                        *          CE SECT 3 SETUP                     80817140
                        *                                              80817150
0E4F 0 C3C6       CEXA7 LD     3 -58       GET PATTERN                  80817160
0E50 0 438C             BSI    3 -116      FILL IOA WITH SAME      SC   80817170
0E51 1 C400 0EA4        LD   L CYLEX       GET ERR AMT                  80817180
0E53 1 4C18 0E57        BSC  L F03XZ,&-    BR NO ERR CNT                80817190
0E55 1 4400 0E99        BSI  L FIOAX       BR TO SET ERR IN IOA         80817200
                        *                                              80817210
0E57 0 C3FD       F03XZ LD     3 -3        GET ADDR                     80817220
0E58 0 EBD8             OR     3 -40       OR IN ADDR OF CYL            80817230
0E59 0 D30B             STO    3 11        PUT IT IN DCT                80817240
                        *                                              80817250
0E5A 0 C3C7             LD     3 -57       GET CE ID -- CEDC --         80817260
0E5B 1 D400 0C57        STO  L DCDA&2      PUT ID IN IOA                80817270
                        *                                              80817280
0E5D 1 C400 0EA4        LD   L CYLEX       GET ERR AMT                  80817290
0E5F 1 D400 0C58        STO  L DCDA&3      PUT WC IN IOA                80817300
                        *                                              80817310
0E61 0 43AB             BSI    3 -85       WRITE CE SECT THREE     SC   80817320
0E62 0 70A0             MDX      CESX3     BR TO ERR ROUT               80817330
                        *                                              80817340
0E63 0 7003       DNGSW MDX      ETEST     BR TO TEST ERR CNT           80817350
0E64 0 4328             BSI    3 40        BR TO MSAG FORM 0       MC   80817360
0E65 0 E066             DC       /E066     -- MSAG # --                 80817370
0E66 0 0000             DC       0         NO ERR LOOP ADDR             80817380
                        *                                     *          80817390
                        *.....................................*          80817400
                        *          CE ERR TBL TEST RT         *          80817410
                        *.....................................*          80817420
                        *                                     *          80817430
0E67 0 C03C       ETEST LD       CYLEX     GET ERR CNT             SE   80817440
0E68 1 4C18 0E97        BSC  L   DIPND,&-   BR IF ZERO ERR CNT           80817450
                        *                                              80817460
0E6A 0 C3F8       WRCET LD     3 -8        GET WORD COUNT               80817470
0E6B 1 D400 0C31        STO  L   DCOUT      CLEAR LINE CTRL              80817480
0E6D 0 6500 CBAD        LDX  L1  /CBAD      BAD CYL ERR MSAG NUM         80817490
0E6F 1 6D00 0C33        STX  L1  DCOUT&2    SET ERR MSAG NUM OPA         80817500
                        *                                              80817510
0E71 0 C032             LD       CYLEX      GET TBL ERR CNT              80817520
0E72 0 D025             STO      ETCNT      SET IT IN CTRL WD            80817530
                        *                                              80817540
0E73 0 6200             LDX    2 0          SET X2 CNT CTRL              80817550
0E74 0 6100             LDX    1 0          SET X1 CNT CTRL              80817560
0E75 0 C3F8             LD     3 -8         GET CNT CTRL                 80817570
0E76 0 1890       WRCPL SRT      16         SHIFT IT TO EXT              80817580
                        *                                              80817590
0E77 1 C600 0EB8        LD   L2 CYLET       GET ERR ADDR                 80817600
0E79 1 D500 0C34        STO  L1 DCOUT&3     SET IT IN OPA                80817610
0E7B 0 7101             MDX    1 1          ADV CTRL X1                  80817620
0E7C 0 7201             MDX    2 1          ADV CTRL X2                  80817630
                        *                                              80817640
0E7D 0 1090             SLT      16         SHIFT FOR CNT                80817650
0E7E 0 93FF             S      3 -1         DEC CTRL                     80817660
0E7F 0 4820             BSC      Z          SKIP IF ZERO                 80817670
0E80 0 70F5             MDX      WRCPL      BR LOOP                      80817680
                        *                                              80817690
```

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                                *                                       *      80817700
                                *.....................................*      80817710
                                *          PRINT CYL ERR TBL DATA     *      80817720
                                *.....................................*      80817730
                                *                                       *      80817740
                                *****************************************      80817750
0E81 0 4480 012F  PRTBL BSI  I  LOG         CALL MON LOG RT     * SC       80817760
0E83 1 0C31       DC    DCOUT   OPA                             *            80817770
0E84 1 0E87       DC    LSTRT   BUSY RT                         *            80817780
0E85 1 0E8D       DC    LHOLD   HOLD CTRL                       *            80817790
                  *****************************************                  80817800
                  *                                                          80817810
0E86 0 7004       MDX   LSTRT&4 PROCEED                                      80817820
                  *                                                          80817830
                  *                                                          80817840
0E87 1 6700 0E81  LSTRT LDX  L3 PRTBL       GET MLN ENTRY                    80817850
0E89 1 6F00 080B  STX  L3 MLN               SET IT IN MLSCF                  80817860
                  *                                                          80817870
0E8B 0 4C80 012D  BSC  I  START             GO TO MONITOR                    80817880
                  *                                                          80817890
0E8D 1 6700 0B88  LHOLD LDX  L3 DCT         SET X3 CTRL ADDR                 80817900
0E8F 0 C008       LD    ETCNT   GET CNT FLD                                  80817910
0E90 0 93F8       S     3 -8    DEC LOOP CNT                                 80817920
0E91 0 D006       STO   ETCNT   SAVE NEW TOTAL                               80817930
0E92 1 4C20 0E74  BSC  L  WRCPL-2,Z TEST IT - NOP IF ZRO                     80817940
                  *                                                          80817950
0E94 0 1010       SLA   16      CLR ACC                                      80817960
0E95 1 D400 0C31  STO  L DCOUT  CLR OPA                                      80817970
                  *                                                          80817980
0E97 0 439F       DIPND BSI   3 -97         BR RETURN             SX         80817990
                  *                                                          80818000
0E98 0 0000       ETCNT DC      0                                            80818010
                  *                                                          80818020
                  *                                                          80818030
                  *                                                          80818040
                  *                                                   *      80818050
0E99 0 0000       FIOAX DC      0           SET IN RETURN ADDR    SE         80818060
0E9A 1 6580 0EA4      LDX  I1 CYLEX         SET ERR CNT IN X1                80818070
0E9C 1 C500 0EB7  FIOAY LD   L1 CYLET-1     GET FIRSTADDR                    80818080
0E9E 1 D500 0C58      STO  L1 DCDA&3        PUT IT IN IOA                    80818090
0EA0 0 71FF           MDX   1 -1           DEC INDEX CTRL                   80818100
0EA1 0 70FA           MDX     FIOAY        BR LOOP                          80818110
0EA2 1 4C80 0E99  FIOAZ BSC  I  FIOAX       RETURN TO MAINLINE    SX         80818120
0EA4 0 0000       CYLEX DC      0           SECT ERR CNT                     80818130
                  *                                                   *      80818140
                  *                  END OF WR CE TEST DATA           *      80818150
                  *                                                   *      80818160
                  *.....................................*                    80818170
                  *                                                   *      80818180
                  *                  ALTERNATE PATTERN RT             *      80818190
                  *                                                   *      80818200
                  *.....................................*                    80818210
                  *                                                          80818220
                  *                                                          80818230
                  *                                                          80818240
0EA5 0 C30B       PATRT LD     3 11         GET ADDR                 SE      80818250
0EA6 0 100D           SLA      13           B13 TO B0                        80818260
0EA7 1 4C28 0EB4      BSC  L   TST10,Z&     BR IF HEAD 1                     80818270
                  *                                                          80818280
0EA9 0 C30B       TSTOO LD     3 11         GET ADDR                         80818290
0EAA 0 4804           BSC      E            SKIP IF ADDR EVEN                80818300
0EAB 0 7004           MDX      PATE5        BR TO SET E5E5 PAT               80818310
                  *                                                          80818320
0EAC 0 C3D0       PAT13 LD     3 -48        GET PATTERN 1313                 80818330
0EAD 0 438C           BSI      3 -116       BR TO FILL IOA           SC      80818340
0EAE 1 4C00 0DC0      BSC  L   FO1WR        BR TO WRITE RT           SX      80818350
                  *                                                          80818360
0EB0 0 C3C6       PATE5 LD     3 -58        GET PATTERN E5E5                 80818370
```



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0EB1 0 438C               BSI   3 -116      BR TO FILL IOA          SC     80818380
0EB2 1 4C00 0DC0          BSC  L  FO1WR      BR TO WRITE RT          SX     80818390
                  *                                                        80818400
0EB4 0 C30B       TST10 LD     3 11         GET ADDR                       80818410
0EB5 0 4804           BSC      E            SKIP IF ADDR EVEN              80818420
0EB6 0 70F5           MDX      PAT13        BR TO SETUP  PAT E5            80818430
0EB7 0 70F8           MDX      PATE5        BR TO SETUP  PAT 13            80818440
                  *                                                        80818450
0EB8   0140       CYLET BSS  E  320          CYLINDER ERR ACCUM             80818460
                  *                                                        80818470
                  *########################################*               80818480
                  ******************************************               80818490
                  *.....................................*                  80818500
                  *                                     *                  80818510
                  *            END OF INITIALIZATION    *                  80818520
                  *                                     *                  80818530
                  *.....................................*                  80818540
                  ******************************************               80818550
                  *########################################*               80818560
                  *                                                        80818570
0FF8 0 000F       OMEGA DC     /000F                                       80818580
0FFA   081E           END      EXEQD        BR TO BEGIN XFER RT            80818590
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

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ABP     0B0C  0AB6
ADSKC   0A82  09F3 0A85 0A87 0A89 0A8B 0AB9
ARM     0B08  0A9C
BEGIN   012C  081E
CDTBC   0995  09D0
CDTGX   09DA  09BC 09D9
CDTLK   09C9  09ED
CDTNR   09B1  0B3F
CDTRC   09A2  09A9 0A05
CDTRT   0992  0925 0945 09B6 09D8 0A04
CDTSE   09AD  09A4
CDTSN   09B8  0929 0949 09DA 09DC
CESX3   0E03  0E62
CESX7   0E05  0E4E
CETRT   0DDA  0DD7 0DF7
CETYP   0DFD  0E01 0E03 0E05
CEXA7   0E4F  0E06
CHNBZ   0A44  0AE1
CHNRA   0AF3  0834
CHNRL   0AF1  0B17
CHNRQ   0ADF  0A44 0B13
CHNSA   0AE2  0832
CKCET   0DE1  0DFC
CNTND   0C43  0C54
COUNT   0C3B  0B22
CSADR   0DED  0DF2
CYLEC   0DD9  0DB8 0DDB 0DDF
CYLET   0EB8  08F8 0DED 0E77 0E9C
CYLEX   0EA4  08F2 08F6 0DB6 0DE1 0DE7 0DF5 0E3B 0E47 0E51 0E5D 0E67 0E71 0E9A
DARMC   0A97  0A6B
DARMZ   0A9C  0A6F 0A95
DCABP   0AAE  0B0D
DCARM   0A8B  0A9A 0B09
DCBPR   0AB6  0A80 0AB0
DCBSY   0C13  0C10
DCBZR   0C22  0C15 0C1C 0C1F
DCBZY   0C20  0C1A
DCDA    0C55  0887 0891 0923 0943 094B 0997 09BE 09E6 0AEB 0B89 0E45 0E49 0E5B
              0E5F 0E9E
DCDLA   0AF9  0B19
DCDSW   0B03  0B1B
DCE     0D97
DCEC    0C1D  0C12
DCELS   0C28  0BDE 0BE7 0BF4 0C00 0C01
DCELX   0C30  0C0C 0C16 0C2A
DCEOD   08BC  087C 0B2E
DCERC   0C0D  0C0B 0C13
DCFMA   0BC3  0BD7
DCFMB   0BC9  0BBB
DCLGC   0C16  0C07
DCLGX   0C17  0BF5 0C02 0C20
DCLR    0C26  0C1B 0C1D
DCOSW   0C03  0BB5 0BCB 0BE8
DCOUT   0C31  0BB4 0BBA 0BC0 0BC2 0BC4 0BC6 0BC8 0BCA 0BD0 0BD2 0BD4 0BD6 0BDC
              0BE0 0BE2 0BE4 0BE9 0BEB 0BED 0BEF 0BF1 0BF6 0BF8 0BFA 0BFC 0BFE
              0C04 0C0F 0C19 0C2D 0E6B 0E6F 0E79 0E83 0E95
DCRBB   0990
DCRD    0936  095A 0963 0B31 0DCD
DCRDY   0AD6  0ADE 0B11
DCREL   098A  094A 0960
DCRE1   097B  0954 096C
DCRE2   097C  0955 0974
DCRGA   097D  094F
DCRHM   08AD  08AA
DCRMB   0C2E
DCRND   08BE  08C0
DCROK   0985  097E
DCRTN   08A7  090C 0B28
```



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DCR10   0938  0936
DCR12   093C  0972
DCR16   0945  0940
DCR19   095D  0964
DCR20   0961  0956
DCR21   0965  0952
DCR22   096D  097A
DCR23   0973  0969
DCSK    09EE  0A27 0B37
DCT     0B88  0822 084D 0854 085B 085F 086D 086F 08B5 08C1 08DF 0926 0946 0958
              095D 0961 0965 0976 0983 09B1 09C9 09D2 0A06 0A60 0A64 0AC8 0AE5
              0AF5 0AFF 0C26 0DC4 0E12 0E8D
DCTL1   085B  085E
DCTL2   085F  0B3D
DCTL3   0869  0894 0898 08B3
DCTL4   086F  087B 08D3
DCTL5   0879  086B 08AF
DCTRL   0859  0B2B 0B3C
DCWBB   0934
DCWEL   092E  092B
DCWR    091A  0B34 0DCB
DCW10   091F  091A
DDSA    087D  0873 0877
DEND    0B2D
DEPA    0853  0808 0857
DEXEQ   0A9E  0B0B
DEXIO   0AAC  0AA7 0AA8
DFILL   0AE9  0AEE 0B15
DHMLE   0A5C  0A71
DHMNR   0A64  0A5E
DHOME   0A56  0A8D
DIPA    0821  0806 084A
DIPND   0E97  0E68
DLA     0B18  0B01
DLABB   0AFF  0B48
DLAND   08DB  08D5
DLNRT   08C1  08D7 0B41
DLNR1   08D4  08C8
DLPA    084C  0807 0851
DMLCK   0880  0867 08A1 08A5
DMLE1   089F  0886
DMLE2   08A3  0890
DMLIC   0896  088A 089D 08A2 08A6
DMLXT   089E  0889
DNGSW   0E63  0DFA 0E04
DRASK   0A72  0ABB
DRD     0B30  0985 0990
DRERT   0AC1  0C50
DRESK   0AB8  0B0F
DRSKR   0AC8  0B3E
DRSKX   0AD2  0A75
DSK     0B36  0A10
DSKA0   0816  0842
DSKA1   0817
DSKA2   0818  0844
DSKA3   0819
DSKA4   081A  0846
DSKA5   081B
DSKA6   081C  0848
DSKA7   081D
DSKBB   0A10  09F9 0A19 0A30
DSKBT   0A1A  0A13
DSKCR   0A0E  0C3F
DSKEE   0A01  0A38
DSKER   0A12  0A0C
DSKIA   0A1F  09F1
DSKIS   0A24  0A1D
DSKNG   0DF9  0DDD
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DSKNR   0A06  0B40
DSK13   0A2A  09F5
DSPLA   09DE  09C8
DSPLP   09E1  09EA
DSPX1   09EB  09DE 09E5
DSW     0B1A  0B05
DVA     08DD  0837 0AE3
DWR     0B33  092C 0934
D13HM   0A3A  0A32
D13MR   0A37  0A43
EDTA1   0813  0830
EDTA2   0814  082D
EDTA3   0815  082A
EMF     0B39  0A4A 0A4C 0A50 0A52 0A54
EMNRT   0A4A  0B3A
END     012E  0B1F
EPA     0808
ERROR   0130  0C0D
ETCNT   0E98  0E72 0E8F 0E91
ETEST   0E67  0E63
EXEQD   081E  0FFA
EXQ     0B0A  0AA9
FIOAX   0E99  0E3F 0E55 0EA2
FIOAY   0E9C  0EA1
FIOAZ   0EA2
FLX     0B14  0AEF
FORM0   0BB0  0983 0BB1
FORM1   0BB6  0BB7
FORM2   0BBC  0958 0961 0965 0BBD
FORM3   0BCC  0BCD
FORM4   0BD8  0BD9
FRM4A   0BE9  0BE5
FRM4B   0BF6  0BF2
F01AA   0DB3  087D
F01AB   0DBC  0DC9
F01AC   0DC4  0DD8
F01AE   0DD0  0DC1
F01AF   0DD4  0DC3
F01RD   0DC2  0DD3 0DD6
F01SK   0DBD
F01WR   0DC0  0DD2 0EAE 0EB2
F02AA   0E07  087E
F02AB   0E0D  0E18
F02AC   0E12  0914 0E24
F02AD   0E1A  0E11
F02AE   0E25  0E1D
F02AF   0E29  0E22
F02AG   0E2D  0E27
F02SK   0E0F  0E2B
F02XB   0E31  0911 0E0D 0E15
F03AA   0E32  087F
F03AB   0E33
F03AC   0E34
F03XY   0E41  0E3D
F03XZ   0E57  0E53
HALT    0133
HNG     0B1C
IPA     0806
LHOLD   0E8D  0E85
LIV     0809  08D9 08EC 0AA0 0C43
LOG     012F  0C17 0E81
LPA     0807
LSTRT   0E87  0E84 0E86
MEND    0B1E
MLN     080B  0841 0850 08E4 0A46 0AFC 0C22 0E89
NTRER   08F0  08E6 08F0 7001
NTRPT   08DE  08EE
NTRST   08E8
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NTRXT   08EE
OMEGA   0FF8  080D
PATE5   0EB0  0EAB 0EB7
PATRT   0EA5  0DBE
PAT13   0EAC  0EB6
PEND    080D
PID     07FF  0820
PRTBL   0E81  0E87
RAD     0801  0875
RDY     0B10  0AD8
REL     0B16  0AF7
RELDV   0132  0AF1
REQ     0B12  0AE7
REQDV   0131  0ADF
REST    0B2A
RID     0800  0871
RSK     0B0E  0AD4
RSTRT   0C48  0ACE
RTN     0B27
RWACK   08F1  08FF 091B 0937
RWCKA   08F8  08FE
RWCKT   0901  08FB
RWCKX   08FF  08F4
RWRT3   0916  0907
SETUP   0DE9
SKADJ   0A77  0AB5
SKOUT   0A7E  0A7A 0A7D
START   012D  08DB 0A48 0B25 0C24 0E8B
STRT    0B24
SW0     0802
SW1     0803  0869 08AD
SW2     0804  0824
SW3     0805  0896 08A7 09C5 09E1
TERM    080C  0AE4 0AF4
TST00   0EA9
TST10   0EB4  0EA7
UNTA1   0830  0825 082C 082F
UNTA2   082D  0828
UNTA3   082A
WAIT1   089C  3001
WAIT2   08BF  3002
WRCET   0E6A
WRCPL   0E76  0E80 0E92
XNR     080A  0C45
END OF ASSEMBLY
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TABLE OF CONTENTS

1. PURPOSE

THE 1810A/B (13SD/44SD) FUNCTION TEST IS DESIGNED TO TEST EACH FUNCTION OF THE DISK FOR COMPLIANCE WITH THE PRODUCT SPECIFICATIONS.

THIS TEST IS WRITTEN TO ACCOMMODATE SYSTEMS WITH ONE OR MORE 13SD (1810A) OR 44SD (1810B) DISK DRIVES. THIS PROGRAM IS DESIGNED TO RUN ANY ONE OF THREE DISK DRIVES WHICH MAY BE ON THE SYSTEM.

SEE SECTION 3.2 (PATCH OPTIONS) FOR INFORMATION ON RUNNING MULTIPLE DRIVES, IN OVERLAP MODE.

2. PREREQUISITES

13SD (1810A) OR 44SD (1810B) DISK DRIVES. THIS PROGRAM IS DE- THE DIAGNOSTIC MONITOR PROGRAM USES 2,047 STORAGE WORDS, AND THIS PROGRAM USES 2,047 STORAGE WORDS.

THIS PROGRAM REQUIRES THAT A PREVIOUSLY INITIALIZED DISK PACK BE INSTALLED ON THE DISK DRIVE TO BE TESTED AND THE DISK DRIVE BE MADE READY. ANY DISK PACK WHICH HAS BEEN PROPERLY INITIALIZED BY THE 2315 DIAGNOSTIC DISK INITIALIZATION PROGRAM MAY BE USED FOR THIS TEST.

3. USE PROCEDURE

3.1 PROGRAM LOADING

PLACE THE INITIALIZED DISK PACK IN THE 1810 TO BE TESTED AND FOLLOW THE STEPS BELOW.

1. DEPRESS START BUTTON.
2. WAIT FOR THE MACHINE TO BECOME READY PRIOR TO EXECUTING THIS PROGRAM.

TO LOAD THE PROGRAM DECK, USE THE STANDARD LOADING PROCEDURE AS DESCRIBED IN THE DIAGNOSTIC MONITOR USE PROCEDURE.

3.2 PROGRAM OPERATION

STANDARD MONITOR OPERATING PROCEDURES APPLY. THESE PROCEDURES ARE SUMMARIZED HERE. SEE DM USE PROCEDURE FOR DETAILS OF PARTS 1-4 BELOW.

1. CLEAR STORAGE TO 7CFF.
2. LOAD DIAGNOSTIC MONITOR
3. SELECT MODE OF EXECUTION
4. SELECT MONITOR CONTROL OPTIONS
5. SELECT PROGRAM OPTIONS FROM.

   TABLE 0 - PROGRAM CONTROL FUNCTION
   TABLE 1 - ROUTINE SELECT FUNCTION
   TABLE 2 - DEVICE SELECT FUNCTION
   PATCH - RANDOM PATTERN SELECTION AND MULTIPLE DRIVE OVERLAP

6. SET CHECK STOP SWITCH TO 'OFF' AND WRITE STORAGE PROTECT SWITCH TO 'YES'.
7. INSTRUCT MONITOR TO EXECUTE THIS PROGRAM.

TABLE 0 - PROGRAM CONTROL FUNCTION (PROGRAM OPTIONS)

SENSE/PROGRAM 0 1 2 3 4 5 6 7	
0 0 0 0 1 0 0 1	1. SET FUNCTION 00 IN SENSE/PROGRAM SWITCHES 0 AND 1 (AS SHOWN). 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7 (AS SHOWN). 3. SET DESIRED CONTROL OPTIONS IN DATA ENTRY SWITCHES 0-15. 4. PRESS CONSOLE INTERRUPT.

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	*DESCRIPTION
1.....	TERMINATE PROGRAM
. . . . . 1	BYPASS ALL PRINTOUTS EXCEPT ERROR MESSAGES (NOTE..ERROR MESSAGES MAY BE BYPASSED BY DM OPTION)
. . . . . 1	LOCK ON ERROR-IF THIS SWITCH IS ON ANY ERROR WILL CAUSE THE PROGRAM TO LOOP IN THAT SECTION UNTIL THIS SWITCH IS CLEARED
1	REQUEST ROUTINES TO PRINT ALL ERRORS (ROUTINES NORMALLY PRINT ONLY FIRST ERROR)

TABLE 1 - ROUTINE SELECTION

1. THESE SWITCHES CAN BE CHANGED AT ANY TIME.
2. IF ZERO IS ENTERED, THE PROGRAM WILL NOT LOOP BUT WILL RUN ALL ROUTINES

SENSE/PROGRAM 0 1 2 3 4 5 6 7	
0 1 0 0 1 0 0 1	1. SET FUNCTION 01 IN SENSE/PROGRAM SWITCHES 0 AND 1 (AS SHOWN). 2. SET PID IN SENSE/ PROGRAM SWITCHES 2-7. (AS SHOWN) 3. SET DESIRED ROUTINE NUMBER (IN HEX) IN DATA ENTRY SWS. 4. PRESS CONSOLE INTERRUPT. 5. TO SELECT A STARTING ROUTINE A. ENTER STARTING ROUTINE NUMBER (IN HEX) B. START PROGRAM RUNNING C. ENTER ROUTINE NUMBER 0

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	*DESCRIPTION
X X X X	ENTER DESIRED ROUTINE NUMBER IN HEXADECIMAL. ROUTINE NUMBERS 0-E HEX ARE LEGAL ENTRIES. NOTE- ENTRY OF AN ILLEGAL ROUTINE WILL CAUSE PROGRAM TERMINATION

TABLE 2 - DEVICE SELECTION

SENSE/PROGRAM 0 1 2 3 4 5 6 7	
1 0 0 0 1 0 0 1	1 SET FUNCTION 10 IN SENSE/PROGRAM SWITCHES 0 AND 1 (AS SHOWN). 2. SET PID IN SENSE/PROGRAM SWITCHES 2-7. (AS SHOWN) 3. SELECT DESIRED DEVICE 4. PRESS CONSOLE INTERRUPT

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	*DESCRIPTION
0 0 0	RUN THE DISK DRIVE ASSOCIATED WITH THE FIRST DDEF ON THE EDIT CARD
1 0 0	RUN THE DISK DRIVE ASSOCIATED WITH THE FIRST DDEF ON THE EDIT CARD
0 1 0	RUN THE DISK DRIVE ASSOCIATED WITH THE SECOND DDEF ON THE EDIT CARD.
0 0 1	RUN THE DISK DRIVE ASSOCIATED WITH THE THIRD DDEF ON THE EDIT CARD.

*CAUTION. ANY BIT ON IN THIS FUNCTION OTHER THAN BITS 1 OR 2 WILL SELECT THE DISK DRIVE ASSOCIATED WITH THE FIRST DDEF.

PATCH OPTIONS

THERE ARE SIX PATCH OPTIONS AVAILABLE WITH THIS PROGRAM. TO USE ONE OR ALL OF THESE OPTIONS MAKE UP PATCH CARD(S) AS SHOWN BELOW AND INSERT INTO THE DECK BEFORE THE BINARY END CARD. PUNCH THE CARDS STARTING IN COLUMN ONE AS SHOWN. VALUES TO BE PATCHED IN SHOULD BE TAKEN FROM A SUMMARY TABLE PRINTOUT.

NOTE- THESE OPTIONS MAY BE INSERTED, AFTER PROGRAM LOAD, THRU THE CONSOLE SWITCHES BUT GREAT CARE MUST BE TAKEN TO COMPUTE CORRECTED PATCH ADDRESSES USING NECESSARY RELOCATION FACTORS.

THESE TWO OPTIONS MAY BE USED IN THE CASE OF A DISK WHICH IS FAILING ON SOME SET PATTERN. THE BEGINNING NUMBER DESIRED MAY BE DETERMINED BY EITHER ERROR PRINTOUTS OBTAINED OR FROM THE SUMMARY PRINTOUT.

1. SELECTION OF FIRST RANDOM NUMBER TO BE USED BY THE RANDOM SEEK ROUTINE (4). THIS NUMBER WILL BE USED AS THE FIRST RANDOM NUMBER ON EVERY ROUTINE PASS. TO SELECT THIS OPTION, PUNCH THE PATCH CARD STARTING IN COLUMN ONE AS SHOWN.

   +081DBXXXX (B= BLANK)
   XXXX= HEXADECIMAL NUMBER WHICH IS USED TO DETERMINE THE FIRST SEEK.
   NOTE- A FULL FOUR DIGITS ARE ENTERED TO ALLOW PROPER RANDOM GENERATION BUT ONLY THE LEFT TWO DIGITS ARE USED BY THE SEEK ROUTINE.

2. SELECTION OF FIRST RANDOM NUMBER TO BE USED BY THE TWO RANDOM PATTERN WRITE-READ ROUTINES (9 AND 10). THIS NUMBER WILL BE USED AS THE FIRST RANDOM NUMBER ON EVERY ROUTINE PASS.

   +081EBXXXX (B= BLANK)
   XXXX= HEXADECIMAL NUMBER WHICH IS THE DESIRED START OF THE PATTERN.

OPTIONS 3,4 AND 5 BELOW ALLOW CONTINUATION OF RANDOM GENERATION FROM A PREVIOUS LOAD OF THE PROGRAM. VALUES TO BE ENTERED CAN BE FOUND IN THE LAST SUMMARY TABLE PRINTED.

3. SELECTION OF FIRST RANDOM NUMBER TO BE USED BY THE RANDOM SEEK ROUTINE. THIS OPTION WILL CAUSE THE RANDOM PATTERN GENERATION TO CONTINUE FROM THE LAST NUMBER USED ON PREVIOUS LOAD OF THE PROGRAM.

   +0875BXXXX (B= BLANK)

4. SELECTION OF FIRST RANDOM NUMBER TO BE USED BY THE RANDOM WRITE-READ ROUTINE (9). THIS OPTION WILL CAUSE THE RANDOM PATTERN GENERATION TO CONTINUE FROM THE LAST NUMBER USED ON PREVIOUS LOAD OF THE PROGRAM.

   +0877BXXXX (B= BLANK)

5. SELECTION OF FIRST RANDOM NUMBER TO BE USED BY THE RANDOM WRITE-READ ROUTINE (10). THIS OPTION WILL CAUSE THE RANDOM PATTERN GENERATION TO CONTINUE FROM THE LAST NUMBER USED ON THE PREVIOUS LOAD OF THE PROGRAM.

   +0879BXXXX (B= BLANK)

6. RUNNING MULTIPLE DRIVES.
   TO RUN TWO OR MORE DRIVES IN OVERLAP PERFORM THE FOLLOWING STEPS.

   A. DUPE THE PROGRAM DECK ONCE FOR EACH ADDITIONAL DRIVE TO BE RUN.

   B. PATCH A PROGRAM ID INTO THE ADDITIONAL DECKS AS FOLLOWS (USE A PID IN THE RANGE 02-3F, WHICH WILL NOT BE INCLUDED IN THIS LOAD). PIDS 09,19, AND 39 ARE SUGGESTED.

      +07FFBXXCO (B= BLANK)
      EXAMPLE TO PATCH PID-19.
      +07FF 1900

   C. MAKE UP EDIT CARDS FOR THE ADDITIONAL DECKS USING THE PATCHED PID.

   D. LOAD ALL DECKS IN OVERLAP MODE AND EXECUTE THEM. SELECT A DIFFERENT DISK DRIVE FOR EACH EXECUTION.

   NOTE- THE PATCHED PID MUST BE USED IN PLACE OF PID 09 FOR FUNCTION SELECTION AND PROGRAM EXECUTION.

7. SELECTION OF ALTERNATE CYLINDERS FOR READ/WRITE ROUTINES. THIS OPTION WILL CAUSE THE READ/WRITE ROUTINES (5,6,8,9,A, B,C,D,E) TO USE THE PATCHED CYLINDER NUMBER IN PLACE OF THE NORMALLY USED CYLINDER NUMBER.

   +0816 XXXX NORMALLY CYLINDER 001 (0008 HEX)
   +0817 XXXX NORMALLY CYLINDER 002 (0010 HEX)
   +0819 XXXX NORMALLY CYLINDER 199 (0638 HEX)
   +081B XXXX NORMALLY CYLINDER 201 (0648 HEX)
   +081C XXXX NORMALLY CYLINDER 202 (0650 HEX)

3.3 PROGRAM HALTS

THIS PROGRAM HAS NO NORMAL WAITS, UNLESS THE DIAGNOSTIC MONITOR OPTION OF HALT ON ERROR IS SELECTED, AND AN ERROR OCCURS. SEE DM USE PROCEDURE FOR THIS HALT.

3.4 PROGRAM TERMINATION

THE PROGRAM WILL NORMALLY TERMINATE AFTER ONE COMPLETE PASS, UNLESS THE DIAGNOSTIC MONITOR OPTION OF LOOP ALL PROGRAMS IS SELECTED. SEE DM USE PROCEDURE FOR THIS OPTION.

THE PROGRAM CAN BE MANUALLY TERMINATED IN ONE OF TWO WAYS.

1. BY THE MONITOR DE-EXECUTE OPTION.

   NOTE- IF THE PROGRAM IS TERMINATED WITH AN INTERRUPT PENDING THE INTERRUPT WILL BE HANDLED BY THE MONITOR AND TREATED AS A SPURIOUS INTERRUPT.

2. BY THE USE OF THE TERMINATE PROGRAM OPTION IN SWITCH FUNCTION 0.

THE PROGRAM WILL ALSO BE TERMINATED WHEN CERTAIN ERRORS OCCUR. SEE SECTION 4.2 (ERROR MESSAGES) FOR ERRORS WHICH CAUSE PROGRAM TERMINATION.

3.5 PROGRAM RESTART

THE PROGRAM CAN BE RESTARTED FOLLOWING ANY TERMINATION BY PERFORMING A 'DE-EXECUTE' FOLLOWED BY AN 'EXECUTE' OPERATION THRU THE MONITOR.

4. PRINTOUTS

THE FOLLOWING SYMBOLS ARE USED IN ALL PRINTOUTS AND HAVE THE SAME MEANING IN ALL PRINTOUTS.

- XXXX - THIS HEXADECIMAL WORD INDICATES THE TEST ROUTINE BEING RUN AT THE TIME OF THE PRINTOUT. (ROUTINE ID-RID)
- YYYY - THIS HEXADECIMAL WORD INDICATES THE ACTUAL BEGINNING ADDRESS OF THE TEST ROUTINE. (RCUTINE ADDRESS-RAD)
- DDDD - THIS HEXADECIMAL WORD CONTAINS THE LAST DSW WORD RECEIVED FROM THE DISK
- 00TF - FILE BEING RUN BY THIS PROGRAM.
  T = FILE TYPE (A OR B)
  F = FILE NUMBER (1,2 OR 3)

NOTE- ANY MESSAGE MODIFIER WHICH IS DESIGNATED AS DECIMAL WILL BE PRINTED IN DECIMAL ONLY IF THE NUMBER IS POSITIVE. IF ANY NUMBER SHOULD BE NEGATIVE (DUE TO SOME HARDWARE ERROR) THAT MODIFIER IS PRINTED IN HEXADECIMAL.

4.1 STATUS MESSAGES

0900 A000 XXXX YYYY DDDD OOTF

MODEL DETERMINATION.
THE PROGRAM HAS DETERMINED (FROM THE DSW FAST ACCESS BIT AND THE SELECTED DEVICE'S AREA CODE) THAT THE DISK BEING RUN IS AS SHOWN BY 'OOTF'. THIS PRINTOUT OCCURS ONLY ONCE EACH TIME THE PROGRAM IS EXECUTED.

0900 A001 XXXX YYYY DDDD OOTF AAAA

AAAA= NUMBER OF RETRIES BEFORE RECOVERY. (DECIMAL)

RECOVERED SEEK ERROR. THIS PRINTOUT WILL ALWAYS BE PRECEEDED BY ONE OR MORE ERROR MESSAGES (UNLESS BY-PASS ERROR MESSAGES OPTION IS SELECTED) WHICH INDICATE THE ERROR OR ERRORS WHICH CAUSED THE SEEK RETRY. THIS PRINTOUT INDICATES THAT DSW ERRORS WERE NOT FOUND AFTER THE COMPLETION OF THE LAST SEEK OPERATION.

0900 A002 XXXX YYYY DDDD OOTF AAAA BBBB

AAAA = NUMBER OF DSW ERRORS BEFORE RECOVERY. (DECIMAL)
BBBB= NUMBER OF COMPARE ERRORS BEFORE RECOVERY (DECIMAL)

RECOVERED READ ERROR. DATA FAILED TO COMPARE ONE OR MORE TIMES BUT WAS CORRECT AFTER THE NUMBER OF RETRIES PRINTED. THIS MESSAGE WILL ALWAYS BE PRECEEDED BY ONE OR MORE ERROR MESSAGES (UNLESS BYPASS ERROR OPTION IS SELECTED) WHICH INDICATE THE ERROR OR ERRORS WHICH CAUSED THE RETRIES.

0900 A003 XXXX YYYY DDDD OOTF AAAA

AAAA= NUMBER OR RETRIES BEFORE RECOVERY. (DECIMAL)

RECOVERED WRITE ERROR. THIS MESSAGE WILL ALWAYS BE PRECEEDED BY ONE OR MORE ERROR MESSAGES (UNLESS BYPASS ERROR MESSAGES OPTION IS SELECTED) WHICH INDICATE THE ERROR OR ERRORS WHICH CAUSED THE RETRIES. THIS MESSAGE INDICATES THAT NO DSW WORD ERRORS WERE FOUND AFTER THE LAST WRITE.

0900 A004 XXXX YYYY DDDD OOTF

DFT TERMINATED. THE ERRORS WHICH CAUSE TERMINATION OF DFT PRECEDE THIS PRINTOUT. THE DFT MUST BE DE-EXECUTED AND RE-EXECUTED TO RERUN THE PROGRAM.

0900 A005 XXXX YYYY DDDD OOTF AAAA BBBB

AAAA= NUMBER OF DSW ERRORS ENCOUNTERED. (DECIMAL)
BBBB= NUMBER OF CMP ERRORS ENCOUNTERED. (DECIMAL)

READ RETRY TERMINATED.
THE READ ROUTINE RETRY PROCEDURE HAS BEEN TERMINATED, DUE TO COMPARE ERRORS. THIS PRINTOUT WILL BE PRECEEDED BY ONE OR MORE ERROR MESSAGES (UNLESS BYPASS ERROR MESSAGES OPTION IS SELECTED) WHICH INDICATE THE ERROR OR ERRORS WHICH CAUSED THE RETRIES.

0900 A00o XXXX YYYY DDDD OOTF

ATTEMPTS TO SEEK A CYLINDER AND VERIFY THE SEEK BY READING SECTOR ID'S RESULTED IN ONE OR MORE FAILURES BUT THE LAST RETRY ATTEMPT WAS SUCCESSFUL.

4.2 COMMAND MESSAGES

0900 C0G0 XXXX YYYY SSSS FFFF

SSSS= CONTENTS OF SWITCH FUNCTION TWO (HEXADECIMAL)
FFFF= ALWAYS FFFF (HEXADECIMAL)

OPERATOR ERROR.
SELECTED A DEVICE THRU SWITCH FUNCTION TWO WHICH IS NOT EDITED.

0900 C001 XXXX YYYY DDDD OOTF

OPERATOR ERROR.
THE DEVICE SELECTED TO BE RUN DOES NOT HAVE A PROPERLY INITIALIZED PACK INSTALLED.

0900 C002 XXXX YYYY DDDD OOTF

XXXX= CONTENTS OF SWITCH FUNCTION ONE (HEXADECIMAL)

OPERATOR ERROR.
AN INVALID ROUTINE HAS BEEN SELECTED FOR LOOPING.

4.3 DATA MESSAGE

0900 D001 XXXX YYYY DDDD OOTF PSCT SKCT SSKE HSKE
DDDD OOTF PSCT RDCT SRDE HRDE
DDDD OOTF PSCT WRCT SWRE HWRE
DDDD OOTF PSCT RECL
DDDD OOTF PSCT FRNS LRNS
DDDD OOTF PSCT FRN1 LRN1
DDDD OOTF PSCT FRN2 LRN2

PSCT= PASS NUMBER (THIS REMAINS THE SAME FOR ALL SEVEN LINES) (DECIMAL)
SKCT= TOTAL NUMBER OF SEEKS ISSUED EXCLUSIVE OF RETRIES(DECIMAL)
SSKE= TOTAL NUMBER OF SOFT SEEK ERRORS (DECIMAL)
HSKE= TOTAL NUMBER OF HARD SEEK ERRORS (DECIMAL)
RDCT= TOTAL NUMBER OF READS ISSUED EXCLUSIVE OF RETRIES(DECIMAL)
SRDE= TOTAL NUMBER OF SOFT READ ERRORS (DECIMAL)
HRDE= TOTAL NUMBER OF HARD READ ERRORS (DECIMAL)
WRCT= TOTAL NUMBER OF WRITES ISSUED EXCLUSIVE OF RETRIES(DECIMAL)
SWRE= TOTAL NUMBER OF SOFT WRITE ERRORS (DECIMAL)
HWRE= TOTAL NUMBER OF HARD WRITE ERRORS (DECIMAL)
RECL= NUMBER OF WORDS WRITTEN ON A SECTOR BY A WRITE USING A WORD COUNT OF 400. (DECIMAL)
FRNS= FIRST RANDOM SEEK ISSUED BY THE RANDOM SEEK ROUTINE (HEXADECIMAL)
LRNS= LAST RANDOM SEEK ISSUED BY THE RANDOM SEEK ROUTINE (HEXADECIMAL)
FRN1= FIRST RANDOM DATA WORD USED BY ROUTINE 9 (HEXADECIMAL)
LRN1= LAST RANDOM DATA WORD USED BY ROUTINE 9 (HEXADECIMAL)
FRN2= FIRST RANDOM DATA WORD USED BY ROUTINE 10 (HEXADECIMAL)
LRN2= LAST RANDOM DATA WORD USED BY ROUTINE 10 (HEXADECIMAL)

SUMMARY PRINTOUT. OCCURS AT THE END OF EACH COMPLETE PROGRAM PASS. ALL COUNTS ARE INITIALIZED TO ZERO WHENEVER THE PROGRAM IS EXECUTED, AND WILL CONTINUE TO ADVANCE UNTIL THE PROGRAM IS DE-EXECUTED. ALL COUNTS WILL ADVANCE FROM 0000 THRU 9999 AND THEN RESET TO 0000.

4.4 ERROR MESSAGES

0900 E001 XXXX YYYY DDDD OOTF AAAA BBBB

AAAA = DATA WORD OF LAST IOCC ISSUED (HEXADECIMAL)
BBBB = CONTROL WORD OF LAST IOCC ISSUED (HEXADECIMAL)

LOST INTERRUPT. FOLLOWING EACH SEEK, READ, OR WRITE THE PROGRAM SETS UP A LOOP THRU THE MONITOR WAITING FOR INTERRUPT. IF THE INTERRUPT HAS NOT OCCURED WITHIN A SPECIFIC NUMBER OF LOOPS THIS PRINTOUT WILL OCCUR.

IF THIS PRINTOUT IS FOLLOWED BY A MONITOR PRINTOUT INDICATING UNEXPECTED INTERRUPT (FOR THE DISK) THEN THE INTERRUPT OCCURED, BUT WAS AT LEAST ONE SECOND LATE.

0900 E002 XXXX YYYY DDDD OOTF AAAA BBBB

AAAA = DATA WORD OF LAST IOCC ISSUED.. (HEXADECIMAL)
BBBB = CONTROL WORD OF LAST IOCC ISSUED (HEXADECIMAL)

SPURIOUS INTERRUPT. THIS PRINTOUT CAN ONLY OCCUR WHEN THIS PROGRAM HAS REQUESTED THE DISK FROM THE MONITOR, BUT IS NOT CURRENTLY EXPECTING AN INTERRUPT.

0900 E003 XXXX YYYY DDDD OOTF

INCORRECT DSW.
THE DISK IS BUSY AND/OR NOT READY WHEN IT SHOULD BE BOTH READY AND NOT BUSY. THIS CHECK IS MADE PRIOR TO ISSUING ANY SEEK, READ, OR WRITE. AS LONG AS THE DISK REMAINS BUSY AND/OR NOT READY THIS PRINTOUT WILL REPEAT APPROXIMATELY EVERY 12 SECONDS UNLESS THE PROGRAM IS DE-EXECUTED.

0900 E004 XXXX YYYY DDDD OOTF AAAA BBBB

AAAA = DATA WORD OF IOCC JUST ISSUED (HEXADECIMAL)
BBBB = CONTROL WORD OF IOCC JUST ISSUED (HEXADECIMAL)

INCORRECT DSW.
THE DISK IS NOT BUSY AND/OR READY WHEN IT SHOULD BE BOTH BUSY AND NOT READY. THIS CHECK IS MADE IMMEDIATELY AFTER EXECUTION OF EVERY SEEK, READ, OR WRITE. THIS MESSAGE IS PRINTED ONLY ONCE, FOLLOWING WHICH THE PROGRAM ENTERS A LOOP THRU THE MONITOR CHECKING FOR LOST INTERRUPT.

0900 E005 XXXX YYYY DDDD OOTF AAAA BBBB

AAAA= DATA WORD OF LAST IOCC ISSUED (HEXADECIMAL)
BBBB= CONTROL WORD OF LAST IOCC ISSUED (HEXADECIMAL)

INVALID SEEK ADDRESS (1810B ONLY). AFTER A SEEK THE DSW INDICATED A SEEK ERROR WHICH WAS AN INVALID ADDRESS ERROR. THIS OPERATION WILL BE RETRIED A MAXIMUM OF SEVEN TIMES. NOTE- IF THE LOCK ON ERROR OPTION IS SELECTED THIS ROUTINE WILL LOOP UNTIL THE SWITCH IS CLEARED.

0900 E006 XXXX YYYY DDDD OOTF AAAA BBBB

AAAA=DECIMAL CYLINDER NUMBER SEEKED FROM.
BBBB=DECIMAL CYLINDER NUMBER SEEKED TO.

HARD SEEK ERROR. (1810B ONLY) EIGHT SEEKS HAVE ALL RESULTED IN SEEK ERRORS WHICH ARE INVALID ADDRESS ERRORS.

0900 E007 XXXX YYYY DDDD OOTF AAAA BBBB

AAAA- DATA WORD OF LAST IOCC ISSUED (HEXADECIMAL)
BBBB- CONTROL WORD OF LAST IOCC ISSUED (HEXADECIMAL)

SEEK INCOMPLETE (1810B ONLY). AFTER A SEEK THE DSW WORD INDICATES A SEEK ERROR WHICH IS A SEEK INCOMPLETE ERROR ON THE 1810B. SEEK OPERATION WILL BE RETRIED A MAXIMUM OF SEVEN TIMES.

0900 E008 -THIS MESSAGE ID IS NOT USED.

0900 E009 XXXX YYYY DDDD OOTF

DSW READ ERROR. THE DATA READ WILL BE CHECKED FOLLOWING THIS PRINTOUT. THE ROUTINE WILL THEN ENTER A RETRY OPERATION. UP TO A MAXIMUM OF SEVEN RETRIES WILL BE EXECUTED.
NOTE- IF THE LOCK ON ERROR OPTION IS SELECTED THE ROUTINE WILL LOOP IN THIS READ UNTIL THE SWITCH IS CLEARED.

0900 E00A XXXX YYYY DDDD OOTF AAAA BBBB

AAAA= NUMBER OF TIMES DSW ERRORS WERE FOUND (DECIMAL)
BBBB= NUMBER OF TIMES COMPARE ERRORS WERE FOUND (DECIMAL)

HARD DSW READ ERROR. READ OPERATION WAS UNSUCCESSFUL AFTER EIGHT TRIES.

0900 E00B XXXX YYYY DDDD OOTF

DSW WRITE ERROR. THE RETRY PROCEDURE WILL BE INITIATED FOR THE WRITE.
NOTE- IF THE LOCK ON ERROR OPTION IS SELECTED THE ROUTINE WILL LOOP IN THIS WRITE OPERATION UNTIL THE SWITCH IS CLEARED.

0900 E00C XXXX YYYY DDDD OOTF AAAA

AAAA= NUMBER OF WRITE DSW ERRORS (DECIMAL)

HARD WRITE ERROR. THE DSW WORD INDICATED AN ERROR ON ALL OF EIGHT WRITES.

0900 E00D XXXX YYYY DDDD OOTF AAAA BBBB CCCC

AAAA- CYLINDER NUMBER SEEKED FROM(HEXADECIMAL)
BBBB- CYLINDER NUMBER EXPECTED (HEXADECIMAL)
CCCC- CYLINDER NUMBER READ FROM DISK (HEXADECIMAL)

SEEK ERROR OCCURRED. ATTEMPTED TO SEEK CYLINDER BBBB FROM CYLINDER AAAA, BUT WHEN SECTOR ID'S WERE READ AFTER THE SEEK, THEY INDICATED THAT THE DISK ACTUALLY REACHED CYLINDER CCCC. THIS WAS DETERMINED BY READING ALL EIGHT SECTOR ID'S AND THEN CHECKING FOR THEM CONTAINING THE SAME CYLINDER NUMBER. SEEK RETRY WILL BE INITIATED USING THE CYLINDER NUMBER READ AS THE PRESENT ARM POSITION. NOTE IF THE LOCK ON ERROR OPTION IS SELECTED THIS ROUTINE WILL LOOP UNTIL THE SWITCH IS CLEARED.

0900 E00E XXXX YYYY DDDD OOTF AAAA BBBB CCCC EEEE
DDDD OOTF FFFF GGGG HHHH JJJJ

MODIFIERS, AAAA THRU JJJJ CONTAIN THE SECTOR ID'S IN HEXADECIMAL IN THE ORDER READ.

READ ERROR.
ISSUED A SEEK OPERATION AND ATTEMPTED TO VERIFY THE SEEK. HOWEVER, WHEN SECTOR ID/S WERE READ FROM THE CYLINDER, THEY DID NOT CONTAIN THE SAME CYLINDER ID OR WERE NOT SEQUENTIAL ON ALL OF EIGHT READS. THE 1810 A/B FUNCTION TEST IS TERMINATED. IF A RERUN IS DESIRED, THE PROGRAM MUST BE DE-EXECUTED AND RE-EXECUTED.

0900 E00F- THIS MESSAGE ID IS NOT USED.

0900 E010 XXXX YYYY DDDD CCTF AAAA BBBB CCCD DDEF GGGG (LINE 1)
DDDD DDTF HHHH JJJJ KKKK (LINE 2)
DDDD DDTF LLLL (LINE 3)

AAAA- CYLINDER NUMBER EXPECTED (DECIMAL)
BBBB- CYLINDER NUMBER READ FROM THE DISK (DECIMAL)
CCCD- SECTOR ID EXPECTED
C- HEAD NUMBER (0 OR 1)
D- SECTOR NUMBER (0 THRU 3)
DDEF- SECTOR ID READ FROM THE DISK
E- HEAD NUMBER (0 OR 1)
F- SECTOR NUMBER (0 THRU 3)
GGGG- NUMBER OF WORDS EXPECTED IN DECIMAL
HHHH- WORD NUMBER IN RECORD IN DECIMAL(1 THRU NUMBER OF WORDS READ)
JJJJ- DATA EXPECTED (HEXADECIMAL)
KKKK- DATA RECEIVED (HEXADECIMAL) -NOTE-I/O AREA IS PRESET TO FFFF
LLLL- TOTAL NUMBER OF BAD DATA WORDS (DECIMAL)

DATA COMPARE ERROR(S).
THE ROUTINE ID (R10) IS AN IMPORTANT CLUE AS TO THE MEANING OF THIS MESSAGE. CHECK THE ROUTINE DESCRIPTION (SECTION 5.0) BEFORE CONTINUING WITH THIS MESSAGE.
PRIOR TO ISSUING A READ XIO, THE I/O AREA (STARTING AT 08C0 HEX) IS SET TO HEXADECIMAL 'FFFF'. AFTER THE READ INTERRUPT HAS OCCURRED, THE DATA IS CHECKED FOR ERRORS. THE FIRST LINE OF THE ERROR MESSAGE WILL INDICATE IF THE SECTOR ID JUST READ WAS AS EXPECTED. THIS LINE IS PRINTED IN DECIMAL AND IF THE SECTOR ID IS IN ERROR, THE SECOND WILL REPEAT THE SAME INFORMATION, ONLY IN HEXADECIMAL FOR BIT BY BIT COMPARISON.

NOTE THIS ROUTINE NORMALLY PRINTS ONLY THE FIRST ERROR UNLESS THE OPTION PRINT-ALL-ERRORS IS SELECTED.

LINE 2 IS REPEATED FOR THE WORD PRECEEDING THE BAD WORD, THE BAD WORD AND THE WORD FOLLOWING THE BAD WORD. FOR EXAMPLE, ASSUME THAT WORD 1 (SECTOR ID) IS INCORRECT. ASSUME WE EXPECTED CYLINDER 1, SECTOR 00 AND THE DATA BEING READ WAS E5E5. THE PRINTOUT WOULD LOOK LIKE THE FOLLOWING.

*****SAMPLE PRINTOUT SAMPLE PRINTOUT SAMPLE PRINTOUT SAMPLE PRINTOUT**********
0900 E01C XXXX YYYY DDDD CCTF 0001 0000 0000 0000 0321
DDDD CCTF 0001 0008 0000
DDDD CCTF 0002 E5E5 E5E5
DDDD CCTF 0001
*****SAMPLE PRINTOUT SAMPLE PRINTOUT SAMPLE PRINTOUT SAMPLE PRINTOUT**********

THIS PRINTOUT SHOWS THAT THE CYLINDER NUMBER WAS READ WRONG. IT FURTHER SHOWS THAT WORD 1 CONTAINED THE INCORRECT CYLINDER NUMBER, BUT THE CORRECT SECTOR ID. WORD 2 CONTAINED THE CORRECT DATA. THE NUMBER OF WORDS READ WAS 321 AND TOTAL ERRORS WAS 1, THEREFORE ONLY THE CYLINDER NUMBER WAS IN ERROR.

AS A SECOND EXAMPLE ASSUME THAT WORDS 3 AND 5 READ INTO CORE BAD, BUT ALL OTHER WORDS WERE READ CORRECTLY. ASSUME ALSO THAT THE OPTION FOR PRINT ALL ERRORS IS SELECTED. (CYLINDER 1, SECTOR 0 AND DATA)

*****SAMPLE PRINTOUT SAMPLE PRINTOUT SAMPLE PRINTOUT SAMPLE PRINTOUT**********
0900 E010 XXXX YYYY DDDD CCTF 0001 0001 0000 0000 0321
(LINE 1) DDDD CCTF 0002 1313 1313
(LINE 2) DDDD CCIF 0003 1313 0313
(LINE 3) DDDD CCTF 0004 1313 1313
(LINE 4) DDDD CCTF 0005 1313 0313
(LINE 5) DDDD CCTF 0006 1313 1313
(LINE 6) DDDD CCTF 0002
*****SAMPLE PRINTOUT SAMPLE PRINTOUT SAMPLE PRINTOUT SAMPLE PRINTOUT**********

THE PRINTOUT SHOWS 2 TOTAL ERRORS AND WORDS 3 AND 5 HAVE DROPPED BIT 3. ALL OTHER WORDS ARE CORRECT. IF THE PRINT-ALL-ERRORS OPTION HAD NOT BEEN SELECTED THEN LINES 4 AND 5 WOULD NOT HAVE APPEARED IN THIS PRINTOUT.

THE WORD PRECEEDING AND WORD FOLLOWING THE ERROR WORD ARE PRESENTED IN THE PRINTOUT TO PROVIDE AS MUCH OF THE PATTERN USED AS PRACTICAL, ESPECIALLY FOR THE RANDOM PATTERN ROUTINES.

0900 E011 XXXX YYYY DDDD CCTF AAAA BBBB CCCD DDEF GGGG

AAAA- DECIMAL CYLINDER NUMBER EXPECTED.
BBBB- DECIMAL CYLINDER NUMBER READ FROM DISK.
CCCD- SECTOR ID EXPECTED.
C- HEAD NUMBER (0 OR 1)
D- SECTOR NUMBER (0 - 3)
DDEF- SECTOR ID READ FROM DISK.
E- HEAD NUMBER (0 OR 1)
F- SECTOR NUMBER (0-3)
GGGG- NUMBER OF WORDS THAT SHOULD HAVE BEEN READ. (DECIMAL)

INPUT TABLE OVERFLOW.
PROBABLY TRANSFERRED MORE WORDS THAN THE WORD COUNT CALLED FOR ON A READ. AT LEAST ONE OF THE TWO WORDS FOLLOWING THE READ RECORD WAS NOT THE SAME AS THE PRESET VALUE OF HEXADECIMAL 'FFFF'.

0900 E012 XXXX YYYY DDDD CCTF AAAA

AAAA- PRESENT CYLINDER NUMBER (DECIMAL)

THE HOME INDICATOR IN THE DSW IS INCORRECT. IT IS OFF WHEN PRESENT CYLINDER IS 0000 OR ON WHEN PRESENT CYLINDER IS NOT 0000. THIS CHECK IS MADE AFTER EVERY SEEK.

0900 E013- THIS MESSAGE ID IS NOT USED.

0900 E014 XXXX YYYY DDDD CCTF

THE DSW FAST ACCESS BIT (BIT 13) IS INCORRECT. THE BIT IS ON FOR A 1810A OR OFF FOR A 1810B.

0900 E015 XXXX YYYY DDDD CCTF

A WRITE WITH A WORD COUNT OF 400 FAILED TO CAUSE THE DSW 'ANY ERROR' AND/OR 'DATA ERROR' BITS TO BE SET.

09C0 EC16 XXXX YYYY DDDD CCTF

A READ WITH A WORD COUNT OF 370 FAILED TO CAUSE THE DSW 'ANY ERROR' AND/OR 'DATA ERROR' BITS TO BE SET.

0900 E017 XXXX YYYY DDDD CCTF AAAA

AAAA= DECIMAL NUMBER OF WORDS WRITTEN

SECTOR GAP TEST.
A WRITE WITH A WORD COUNT OF 400 WROTE LESS THAN 331 WORDS, OR MORE THAN 358.

0900 E018 XXX YYY DDD CCTF

WRITING 400 WORDS ON CYLINDER 2-SECTOR ZERO DESTROYED DATA ON CYLINDER 2-SECTOR ONE.

0900 E019- THIS MESSAGE ID IS NOT USED.

0900 E01A XXXX YYYY DDDD CCTF AAAA BBBB

AAAA= NUMBER OF TIMES DSW ERRORS WERE FOUND DURING READ-CHECK(DECIMAL)
BBBB= NUMBER OF TIMES DATA WAS TRANSFERRED BY A READ CHECK (DECIMAL)

ROUTINE 8 SUMMARY.
THIS PRINTOUT WILL OCCUR ONLY IF ROUTINE 8 ENCOUNTERED AN ERROR.

0900 E01B XXXX YYYY DDDD CCTF

INVALID SEEK ERROR.
A SEEK CYLINDER 203 WAS ISSUED AND THE INTERRUPT DSW DID NOT CONTAIN THE SEEK ERROR INDICATION.
THIS PRINTOUT OCCURS ONLY IF RUNNING A 1810B

0900 E01C XXXX YYYY DDDD CCTF

C.E. MODE ERROR.
THE DISK WAS PLACED IN C.E. MODE AND THE DSW SENSED WITHOUT RESET. THE C.E. BUSY AND/OR C.E. NOT READY BITS WERE FOUND TO BE ON AT THIS TIME.
NOTE- THIS ROUTINE IS ALWAYS BYPASSED IF RUNNING THE PROGRAM AS AN ON LINE FUNCTION TEST.

0900 E01D XXXX YYYY DDDD CCTF

STORAGE PROTECT ERROR.
ONE WORD WAS READ FROM THE DISK INTO A STORAGE PROTECTED WORD AND THE STORAGE PROTECT VIOLATION BIT WAS NOT FOUND ON IN THE DSW WORD. THIS PRINTOUT WILL ALWAYS OCCUR IF THE WRITE STORAGE PROTECT SWITCH IS IN THE 'NO' POSITION.
NOTE- THIS ROUTINE IS ALWAYS BYPASSED IF RUNNING THE PROGRAM AS AN ON LINE FUNCTION TEST.

0900 E01E XXXX YYYY DDDD CCTF AAAA

AAAA= HEXADECIMAL CONTENTS OF STORAGE PROTECTED LOCATION FOLLOWING THE READ. (THIS WORD WAS PRESET TO 'FFFF' PRIOR TO THE READ)

STORAGE PROTECT ERROR.
ONE WORD WAS READ FROM THE DISK INTO STORAGE PROTECTED LOCATION,'08C1'. AND DATA WAS TRANSFERRED INTO THE PROTECTED WORD. THIS PRINTOUT WILL ALWAYS OCCUR IF THE WRITE STORAGE PROTECT SWITCH IS IN THE 'NO' POSITION. THIS ROUTINE IS ALWAYS BYPASSED IF RUNNING THE PROGRAM AS AN ON LINE FUNCTION TEST.

0900 E01F XXXX YYYY DDDD CCTF ABCD

ABCD-
A= FIRST SECTOR COUNT FOUND (S/B=0)
B= SECOND SECTOR COUNT FOUND (S/B=1)
C= THIRD SECTOR COUNT FOUND (S/B=2)
D= FOURTH SECTOR COUNT FOUND (S/B=3)

SECTOR HIGH LOW ERROR.
THE DSW WORD IS CHECKED FOR PROPER SECTOR COUNT STEPPING, STARTING WITH SECTOR ZERO. THE ROUTINE THEN CHECKS THE FOUR DIFFERENT COUNTS OBTAINED AND PRINTS IF STEPPING IS INCORRECT. THIS ROUTINE IS ALWAYS BYPASSED IF RUNNING THE PROGRAM AS AN ON LINE FUNCTION TEST, OR IF RUNING IN OVERLAP.

5. COMMENTS

5.1 DESCRIPTION OF TEST ROUTINES

DECIMAL ROUTINE NUMBER	HEXADECIMAL ROUTINE NUMBER	DESCRIPTION
0	0	THIS IS A ROUTINE WHICH IS RUN ONCE EACH TIME THE PROGRAM IS EXECUTED. THIS ROUTINE IS ALWAYS RUN REGARDLESS OF ANY OPTIONS. THE ROUTINE WILL.- A. CHECK THE SECTOR COUNT IN THE DSW FOR PROPER STEPPING. NOTE- THIS ROUTINE IS ONLY RUN IF RUNNING OFF LINE AND IN NON-OVERLAP MODE. B. SENSE DISK DSW AND USE FAST ACCESS BIT TO DETERMINE DISK MODEL. ISSUE A SEEK TO HOME THROUGH THE XEQ ROUTINE. THE 'MODEL' INDICATOR SWITCH IS SET FOR 1810B, CLEARED FOR 1810A. THE FILE ID (A1,A2,A3,B1,B2,B3) USED FOR PRINTOUTS IS CREATED ALSO. C. READ 321 WORDS OF HEXADECIMAL '1313' FORM CYLINDER 0,SECTOR 0. VERIFY ALL DATA. D. SEEK CYLINDER 199 THRU THE VERFY ROUTINE. READ SECTOR 3 TO GET THE BAD CYLINDER TABLE. CHECK THAT THE SECOND WORD OF THIS SECTOR IS HEXADECIMAL 'CEDC'. IF NOT, TERMINATE THE DFT TO PREVENT POSSIBLE CUSTOMER PACK DAMAGE.
1	1	THIS ROUTINE WILL TEST THE DISK DSW INDICATORS. A. TEST THE FAST ACCESS DSW BIT. SHOULD BE ON FOR A 1810B AND OFF FOR A 1810A. B. IF THE MODEL SWITCH INDICATES 1810B, ISSUE AN INVALID SEEK AND CHECK THE DSW SEEK ERROR BIT FOR BEING ON. C. PLACE THE DISK IN CE MODE AND CHECK THAT NEITHER CE DSW BIT IS ON. NOTE- C ABOVE IS BYPASSED IF THE PROGRAM IS RUNNING AS AN ON LINE FUNCTION TEST. LOOP THIS ROUTINE 50 TIMES.

2	2	READ ONE WORD INTO A STORAGE PROTECTED WORD AND CHECK THE DSW SPV BIT FOR BEING ON. CHECK ALSO THAT NO DATA WAS TRANSFERRED INTO THE PROTECTED WORD. NOTE- THIS ROUTINE IS BYPASSED IF RUNNING THE PROGRAM AS AN ON LINE FUNCTION TEST. LOOP THIS ROUTINE 50 TIMES.
3	3	EXECUTE SEEKS OF 2 IN, 1 OUT FROM HOME TO CYLINDER 202 (EXCEPT CYLINDERS 90-110) EXECUTE SEEKS OF 2 OUT, 1 IN FROM CYLINDER 202 TO HOME (EXCEPT CYLINDERS 90-110). VERIFY ALL SEEKS BY READING ALL EIGHT SECTOR ID'S. SEEK OUT = SEEK TOWARD HOME. SEEK IN = SEEK AWAY FROM HOME.
4	4	EXECUTE 100 RANDOM SEEKS WITHOUT SEEKING HOME BETWEEN SEEKS. IF THE GENERATED NUMBER WOULD CAUSE AN INVALID SEEK OR A SEEK TO CYLINDERS 90-110 IT WILL BE REJECTED AND A NEW NUMBER IS GENERATED. VERIFY EACH SEEK BY READING ALL EIGHT SECTOR ID'S. THE RANDOM NUMBER GENERATOR WILL NOT BE RESET EXCEPT BY RE-LOADING THE DFT TO ESTABLISH A WIDE VARIETY OF RANDOM SEEKS. PROVISION IS MADE FOR EXECUTING THE SAME SEQUENCE OF SEEKS THRU THE LOCK ON ERROR OPTION, OR THE PATCH STARTING SEEK OPTION. (REF.SEC. 3.2-PATCH OPTION)
5	5	READ 320 WORDS OF HEXADECIMAL 1313 FROM CYLINDER 1, SECTOR 0 AND VERIFY THE DATA READ. LOOP THIS ROUTINE 50 TIMES.
6	6	READ 320 WORDS OF HEXADECIMAL E5E5 FROM CYLINDER 201, SECTOR 6 AND VERIFY CORRECT DATA. LOOP THIS ROUTINE 50 TIMES.
7	7	READ WITH A WORD COUNT OF ZERO AND CHECK THE I/O AREA TO SEE THAT NO WORDS ARE TRANSFERRED. LOOP THIS ROUTINE 50 TIMES.
8	8	READ-CHECK CYLINDER 1, SECTOR 0, AND MAKE SURE NO WORDS ARE TRANSFERRED. IF ERRORS ARE FOUND ONLY THE FIRST SUCH ERROR IS PRINTED ALONG WITH TOTAL NUMBER OF ERRORS. (UNLESS THE PRINT ALL ERRORS OPTION IS SELECTED.) LOOP THIS ROUTINE 50 TIMES.
9	9	GENERATE 320 WORDS OF RANDOM DATA AND WRITE THESE WORDS ON CYLINDER 2, SECTOR 0. READ THE DATA WRITTEN AND CHECK THE DATA. IF ANY COMPARE DATA ERRORS ARE FOUND, RETRY THE READ (NOT THE WRITE) UP TO SEVEN TIMES. IF LOCK ON ERROR OPTION IS SELECTED LOOP THE ROUTINE (IF ERRORS WERE FOUND) USING THE SAME DATA UNTIL THE SWITCH IS CLEARED. IF LOCK ON ERROR OPTION IS NOT SELECTED, OR IF NO ERRORS EXIST, LOOP THE ROUTINE FIFTY TIMES WITH FIFTY DIFFERENT RANDOM PATTERNS. NOTE- PROVISION IS MADE FOR ALWAYS USING THE SAME PATTERN THRU THE PATCH OPTION. (REF.SEC. 3.2-PATCH OPTION)
10	A	SAME ROUTINE AS ROUTINE 9 EXCEPT THAT CYLINDER 202, SECTOR 6 IS USED.

11	B	WRITE CYLINDER 2, SECTOR 0 USING A WORD COUNT OF 1 AND DATA OF E5E5. READ THE SECTOR AND SEE THAT ALL WORDS EXCEPT THE FIRST ARE ZERO. LOOP THE ROUTINE 50 TIMES.
12	C	WRITE CYLINDER 2, SECTOR 0 WITH A WORD COUNT OF 400 AND DATA OF HEXADECIMAL 1313. READ SECTOR 0 AND DETERMINE HOW MANY WORDS WERE WRITTEN AND SAVE FOR THE SUMMARY. IF LESS THAN 331 OR MORE THAN 358 WORDS WERE WRITTEN, PRINT AN ERROR MESSAGE. CHECK THAT THE SECTOR ID IN CYLINDER 2, SECTOR 1 IS NOT DESTROYED. CHECK THAT BOTH ANY ERROR AND DATA ERROR BITS IN THE DSW ARE ON. LOOP THIS ROUTINE 50 TIMES. NOTE- IF THE SECTOR ID IN CYLINDER 2, SECTOR 1 IS DESTROYED IT WILL BE RESTORED BY THE ROUTINE.
13	D	WRITE 320 WORDS OF HEXADECIMAL 1313 IN CYLINDER 2, SECTOR 0. READ AND VERIFY CORRECT DATA. LOOP THIS ROUTINE 50 TIMES.
14	E	WRITE 320 WORDS OF HEXADECIMAL E5E5 IN CYLINDER 202, SECTOR 6. READ AND VERIFY CORRECT DATA. LOOP THIS ROUTINE 50 TIMES.

5.2 DESCRIPTION OF SUB-ROUTINES

ALL THE SUBROUTINES DESCRIBED PROVIDE ANY NECESSARY ERROR AND STATUS PRINTOUTS. (REFERENCE SECTION 4.)

ALL SUBROUTINES WHICH REQUIRE THE OPTION ARE PROVIDED WITH THE 'LOCK ON ERROR' OPTION. THIS OPTION WILL LOOP THE SUBROUTINE IN THE SMALLEST POSSIBLE LOOP WHICH CAUSED THE ORIGINAL ERROR. ONCE AN ERROR OCCURS, AND THE OPTION IS SELECTED, THE ROUTINE WILL REMAIN IN THE LOOP AS LONG AS THE 'LOCK ON ERROR' SWITCH IS ON, WHETHER THE ERROR RECURRS OR NOT. IF NO ERROR OCCURS THEN THE OPTION HAS NO EFFECT.

CALL

BSI 2 STMLS-T8

THIS SUBROUTINE IS USED TO SET MLSCF ENTRIES WHEN EXITING TO THE MONITOR.
THE ROUTINE WILL SAVE INDEX REGISTERS 1 AND 2, SET AN MLSCF ENTRY, AND EXIT TO THE MONITOR 'START' ROUTINE.
UPON RETURN FROM THE MONITOR THE SUBROUTINE WILL RESTORE INDEX REGISTERS 1 AND 2 AND BRANCH TO CALL+1.

BSI 2 ZRQDV-T8

THIS ROUTINE IS USED TO REQUEST USE OF THE DISK FROM THE DIAGNOSTIC MONITOR.
THE ROUTINE WILL FIRST CHECK TO SEE IF THE DISK IS ALREADY REQUESTED.
IF NOT, THEN A CALL IS MADE TO THE DIAGNOSTIC MONITOR ROUTINE, REQDV, AND UPON RETURN EXIT IS TO CALL+1.
IF ALREADY REQUESTED THE ROUTINE MERELY EXITS TO CALL+1.

```
BSI  2  XEQ-TB
```

THIS SUBROUTINE BUILDS AND EXECUTES AN XIO INSTRUCTION. THE ROUTINE THEN LOOPS THRU THE DIAGNOSTIC MONITOR WAITING FOR AN INTERRUPT.

IF THE INTERRUPT DOES NOT OCCUR WITHIN A SPECIFIC NUMBER OF LOOPS, THE MESSAGE ID FOR LOST INTERRUPT IS PRINTED AND THE FUNCTION TEST IS TERMINATED.

IF THE INTERRUPT OCCURS IN TIME THE ROUTINE EXITS DIRECTLY TO CALL+1 WITH THE DSW SENSED AT INTERRUPT STORED IN LOCATIONS ZSNS AND TBDSW.

```
BSI  2  ZRLDV-TB
```

THIS ROUTINE IS USED TO RELEASE THE DISK TO THE MONITOR. THE ROUTINE FIRST CHECKS TO SEE IF THE DISK IS ALREADY RELEASED. IF NOT, THE ROUTINE CALLS THE DIAGNOSTIC MONITOR ROUTINE, RELDV. UPON RETURN FROM THE MONITOR THE ROUTINE EXITS TO CALL+1. IF THE DISK IS ALREADY RELEASED, THE ROUTINE MERELY EXITS TO CALL+1.

```
BSI  2  CHK-TB
DC      RETURN 1
```

THIS SUBROUTINE IS USED TO CHECK FOR THE LOCK ON ERROR OPTION SELECTED. IF THE SWITCH IS ON THE ROUTINE RETURNS INDIRECTLY VIA THE ADDRESS RETURN1 IN CALL+1. IF THE SWITCH IS OFF THE ROUTINE RETURNS DIRECTLY TO CALL+2.

```
BSI  2  SETV-TB
(A REGISTER CONTAINS DATA TO SET)
```

THIS SUBROUTINE SETS THE I/O AREA TO THE CONTENTS OF THE A REGISTER. THE NUMBER OF WORDS TO BE SET MUST BE STORED IN LOCATION COMA PRIOR TO THE CALL.

```
BSI  2  RNDOM-TB
(A REGISTER MUST CONTAIN
A NUMBER)
```

THIS ROUTINE USES THE NUMBER IN THE A REGISTER TO GENERATE A RANDOM NUMBER, AND RETURNS TO CALL+1 WITH THE NEW NUMBER IN THE A REGISTER. THE NUMBER IN THE A REGISTER AT THE TIME OF THE CALL IS NORMALLY THE LAST RANDOM NUMBER USED.

```
BSI  2  STMSG-TB
DC      FMMM
          F=    FORM NUMBER
          MM=   MESSAGE ID.
        NOTE    IF BIT ZERO OF THE CALL EQUALS 1
                THIS MESSAGE IS PRINTED AS AN ADDITIONAL
                LINE MESSAGE AND PID-MID-RID-RAD WILL
                NOT APPEAR IN THE LINE OF PRINT.
```

THIS ROUTINE WILL SET UP THE MESSAGE SPECIFIED BY THE FORM NUMBER. THE MESSAGE ID IS THEN CHECKED TO SEE IF HEX CHARACTER ONE IS AN E. IF IT IS AN E THE DIAGNOSTIC MONITOR ERROR ROUTINE IS CALLED. OTHERWISE THE LOG ROUTINE IS CALLED, UNLESS THE BYPASS LOG MESSAGES OPTION IS SELECTED. IF THE CALL WAS TO THE ERROR ROUTINE THE DIAGNOSTIC MONITOR OPTION OF LOOP ON ERROR IS CHECKED AND IF SELECTED THE TEST ROUTINE CAUSING THE ERROR WILL BE LOOPED. THIS ROUTINE NORMALLY EXITS TO CALL+2.


```
BSI  2  VERFY-TB
DC      CYL.NO.DESIRED
DC      ERROR RETURN
```

THIS ROUTINE WILL SEEK THE DESIRED CYLINDER BY CALLING ROUTINE SEEK. UPON RETURN FROM THE SEEK ROUTINE, THIS ROUTINE WILL READ SECTOR ID'S. IF ALL SECTOR IDS ARE FROM THE SAME CYLINDER AND THE SECTOR ADDRESSES ARE SEQUENTIAL THE ROUTINE THEN CHECKS FOR DESIRED CYLINDER. IF THIS IS THE DESIRED CYLINDER THE ROUTINE EXITS TO CALL+3.

IF ALL ID'S ARE NOT FROM THE SAME CYLINDER, OR SECTOR ADDRESSES ARE NOT SEQUENTIAL, THE ROUTINE ENTERS A RETRY PROCEDURE. IF THE ROUTINE CANNOT VERIFY THE CYLINDER REACHED ON ALL OF EIGHT TRIES THE FUNCTION TEST IS TERMINATED. (UNLESS THE LOCK ON ERROR OPTION IS SELECTED.)

```
BSC  L  SEEK
(A REGISTER MUST CONTAIN THE DESIRED
CYLINDER NUMBER, RIGHT JUSTIFIED)
```

THIS SUBROUTINE BUILDS THE CORRECT IOCC WORDS FOR THE DISK TYPE (1810 A OR B) BEING RUN, AND ISSUES THE COMMAND, THRU THE XEQ SUBROUTINE.

IF DSW ERRORS ARE FOUND AFTER THE INTERRUPT, UP TO SEVEN RETRIES WILL OCCUR.

IF THE DISK IS A 1810B AND ALL EIGHT TRIES RESULTED IN SEEK INCOMPLETE DSW ERROR, THE FUNCTION TEST WILL BE TERMINATED.

IF THE ERRORS WERE NOT SEEK INCOMPLETE, BUT DID PERSIST THROUGH ALL 8 TRIES THE ROUTINE EXITS BACK TO VERIFY ROUTINE TO AN ERROR RETURN. IF ANY TRY RESULTED IN NO DSW ERRORS THEN THE ROUTINE EXIT IS NORMAL.

```
BSI  2  READ-TB
DC      WORD COUNT
DC      NUMBER (USED IN CALL TO CMP ROUTINE)
DC      ERROR RETURN 1
(A REG. CONTAINS SECTOR DESIRED.)
```

THIS ROUTINE WILL BUILD THE READ IOCC, PRESET THE I/O AREA TO FFFF, SET THE WORD COUNT INTO THE I/O AREA AND ISSUE THE READ COMMAND THRU SUBROUTINE XEQ.

UPON RETURN FROM XEQ THE DSW IS CHECKED FOR ANY READ ERRORS. WITH OR WITHOUT DSW ERRORS THIS ROUTINE WILL THEN CALL THE CMP SUBROUTINE, TO CHECK DATA READ.

IF ALL EIGHT TRYS FAIL THEN THE ROUTINE EXIT WOULD BE INDIRECTLY ON ERROR RETURN 1.

IF ANY READ TRY WAS SUCCESSFUL THE RETURN IS TO CALL+4.

```
BSI     CMP
MDX     ERROR RETURN
```

THIS ROUTINE WILL MAKE A WORD BY WORD COMPARISON OF THE DATA READ AGAINST THE DATA EXPECTED. THE ROUTINE WILL ALSO MAKE A CHECK OF THE WORD COUNTER BY COMPARING TO SEE IF MORE WORDS WERE TRANSFERRED THAN EXPECTED.

IF NO ERRORS ARE FOUND THE ROUTINE EXITS DIRECTLY TO CALL+2, OTHERWISE THE EXIT IS TO CALL+1.

```
BSI   2  WRITE-TB
DC       NUMBER OF WORDS (IF BIT 0 = 1, DO NOT PRESET I/O AREA)
DC       DATA TO BE PRESET IN I/O AREA
DC       ERROR RETURN
(A REG. CONTAINS THE SECTOR NUMBER)

      THIS ROUTINE WILL PRESET THE I/O AREA WITH DATA TO BE
WRITTEN.  THE ROUTINE WILL THEN PLACE THE SECTOR ID AT I/O
AREA PLUS 1 AND WORD COUNT AT I/O AREA.  THE ROUTINE WILL BUILD
THE IOCC AND ISSUE THE WRITE COMMAND, THRU THE XEQ ROUTINE.
      UPON RETURN FROM XEQ THE DSW IS CHECKED FOR ERRORS.
      IF ANY ERRORS EXIST THE ROUTINE WILL RETRY UP TO A MAXIMUM OF
7 TIMES.
      IF ALL 8 WRITE TRIES FAIL THE ROUTINE WILL EXIT INDIRECTLY
TO ERROR RETURN ADDRESS.
      IF ANY WRITE TRY IS SUCCESSFUL THE ROUTINE WILL EXIT DIRECT-
LY TO CALL+4.
```

---------- LAST PAGE ----------

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.

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).

COLUMN	1	2-3 PROGRAM ID	4-5	6	7-8	9-10 CARD SEQUENCE NUMBER	11	12-13 NUMBER OF EDIT ENTRIES	14-15 (1-B)	16	17-20 DRIVE 1 DDEF ENTRY 1 (INTERRUPT LEVEL (HEX) / ILSW BIT (HEX) / CHANNEL (OR F))	21	22-25 DRIVE 2 DDEF ENTRY 2 (INTERRUPT LEVEL (HEX) / ILSW BIT (HEX) / CHANNEL (OR F))	26	27-30 DRIVE 3 DDEF ENTRY 3 (INTERRUPT LEVEL (HEX) / ILSW BIT (HEX) / CHANNEL (OR F))	31	32-35 ALTERNATE FILE ADDRESSES ENTRY 4 ADDRESS REFERENCE 1 ** 0000	36	37-40 ENTRY 5 ADDRESS REFERENCE 2 ** 0008	41	42-45 ENTRY 6 ADDRESS REFERENCE 3 ** 0010	46	47-50 ENTRY 7 ADDRESS REFERENCE 4 ** 0018	51	52-55 ENTRY 8 ADDRESS REFERENCE 5 ** 0638	56	57-60 ENTRY 9 ADDRESS REFERENCE 6 ** 0640	61	62-65 ENTRY A ADDRESS REFERENCE 7 ** 0648	66	67-70 ENTRY B ADDRESS REFERENCE 8 ** 0650	71	72-75
											0111		0122		0133																	
CARD 0	E	09	00		ED	00		00	0																							
END	E	09	00		FF	FF																										

CARD 0 CONTAINS THE DDEF'S FOR THE 1810 FILES. REFER TO NOTE AT BOTTOM OF PAGE.

CARD END IS THE "END EDIT CARD". PUNCH EXACTLY AS IS SHOWN.

** ADDRESSES NORMALLY USED. THESE ADDRESSES NEED NOT BE PUNCHED UNLESS AN ADDRESS IS BEING CHANGED. THEN, ALL ADDRESSES TO THE LEFT OF SAID CHANGE MUST BE PUNCHED. AND THE TOTAL NUMBER OF ALL ENTRIES INDICATED (COL. 15). SEE SEC. 2.2.1.B

IF SYSTEM HAS A1 OR A2 FILE. THE UNUSED DRIVE FIELDS MUST BE PUNCHED 0000 WHENEVER AN ADDRESS REFERENCE FIELD IS PUNCHED. (OTHERWISE LEAVE UNUSED DRIVE FIELDS BLANK.) SEE SEC. 2.2.1.B

```
*--------------------------------------------------------------------80900020
*                                                                    80900030
*                    THIS PROGRAM USES A NEW CODING                  80900040
*                    CALLED EXTENDED MNEMONIC                        80900050
*                    CODING.                                         80900060
*                                                                    80900070
*                    THIS CODING IS SUMMARIZED HERE                  80900080
*                    FOR CONVENIENCE.                                80900090
*                                                                    80900100
*--------------------------------------------------------------------80900110
*                                                                    80900120
* EXTENDED      STANDARD        MEANING                              80900130
* MNEMONIC      MNEMONIC        OF CODE                              80900140
* CODING        EQUIVALENT                                           80900150
*---------------+---------------+-------------------------------------80900160
* SKP    &      BSC    &       SKIP IF A IS                         80900170
*                               PLUS.                                80900180
*---------------+---------------+-------------------------------------80900190
* SKP    &-     BSC    &-      SKIP IS A IS                         80900200
*                               PLUS OR MINUS.                       80900210
*---------------+---------------+-------------------------------------80900220
* SKP    Z      BSC    Z       SKIP IF A IS                         80900230
*                               ZERO.                                80900240
*---------------+---------------+-------------------------------------80900250
* SKP    O      BSC    O       SKIP IF OVERFLOW                     80900260
*                               IS OFF.                              80900270
*---------------+---------------+-------------------------------------80900280
* SKP    C      BSC    C       SKIP IF CARRY IS                     80900290
*                               OFF                                  80900300
*---------------+---------------+-------------------------------------80900310
* SKP    &-C    BSC    &-C     SKIP IF A IS                         80900320
*                               PLUS OR MINUS OR                     80900330
*                               IF CARRY IS OFF.                     80900340
*---------------+---------------+-------------------------------------80900350
* B      EXIT   MDX    EXIT    BRANCH TO EXIT                       80900360
*                               WHERE EXIT IS                        80900370
*                               WITHIN NORMAL                        80900380
*                               DISPLACEMENT.                        80900390
*---------------+---------------+-------------------------------------80900400
* B   L  ALPH   BSC L  ALPH    BRANCH TO ALPH.                      80900410
*---------------+---------------+-------------------------------------80900420
* BZ     BETA   BSC L  BETA,&- BRANCH TO BETA                       80900430
*                               IF A IS ZERO.                        80900440
*---------------+---------------+-------------------------------------80900450
* BNZ    BETA   BSC L  BETA,Z  BRANCH TO BETA                       80900460
*                               IF A IS NON-ZERO                     80900470
*---------------+---------------+-------------------------------------80900480
* BNZ I  BETA   BSC I  BETA,Z  BRANCH                               80900490
*                               INDIRECTLY TO                        80900500
*                               BETA IF A IS                         80900510
*                               NON-ZERO.                            80900520
*---------------+---------------+-------------------------------------80900530
* BN     RTNA   BSC L  RTNA,Z& BRANCH TO RTNA                       80900540
*                               IF A IS MINUS.                       80900550
*---------------+---------------+-------------------------------------80900560
* BNN    RTNB   BSC L  RTNB,-  BRANCH TO RTNB                       80900570
*                               IF A IS                              80900580
*                               NOT MINUS.                           80900590
*---------------+---------------+-------------------------------------80900600
* BP     SUBO   BSC L  SUBO,Z- BRANCH TO SUBO                       80900610
*                               IF A IS PLUS.                        80900620
*---------------+---------------+-------------------------------------80900630
* BNP    SUB    BSC L  SUB,&   BRANCH TO SUB                       80900640
*                               IF A IS NOT                          80900650
*                               PLUS.                                80900660
*---------------+---------------+-------------------------------------80900670
* BC     ENTR   BSC L  ENTR,C. BRANCH TO ENTR                       80900680
*                               IF CARRY IS ON.                      80900690
```



```
*---------------+---------------+-------------------------------------80900700
* BO   2 5      BSC L2 5,O      BRANCH TO ADRS.                      80900710
*                               SPECIFIED BY                         80900720
*                               CONTENTS OF IX.                      80900730
*                               2 PLUS 5 IF                          80900740
*                               OVERFLOW IS ON.                      80900750
*---------------+---------------+-------------------------------------80900760
* BOD    SAFE   BSC L  SAFE,E  BRANCH TO SAFE                       80900770
*                               IF A IS ODD.                         80900780
*---------------+---------------+-------------------------------------80900790
* MDM    AVA,5  MDX L  AVA,5   INCREMENT ADRS.                      80900800
*                               AVA BY 5.                            80900810
*---------------+---------------+-------------------------------------80900820
* XCH           RTE    16      EXCHANGE THE                         80900830
*                               CONTENTS OF A                        80900840
*                               AND Q.                               80900850
*---------------+---------------+-------------------------------------80900860
*--------------------------------------------------------------------80900870
*--------------------------------------------------------------------80900880
*                                                                    80900890
*====================================================================80900900
*                                                                    80900910
*====================================================================80900920
*     SUBROUTINE CALLS                                               80900930
*                                                                    80900940
*  BNDEC                                                             80900950
*     A REG.=HEX NUMBER (0-9999 BASE 10)                             80900960
*     BSI     BNDEC       CONVERT HEX TO DECIMAL                     80900970
*     A REG.=CONVERTED DEC. NUMBER                                   80900980
*                                                                    80900990
*  CKLK                                                              80901000
*     BSI    2 CKLK-TB    CHECK BIT 12 SWO                           80901010
*     DC      RETURN ADRS IF BIT 12 SET                             80901020
*                                                                    80901030
*  CMP                                                               80901040
*     BSI     CMP         COMPARE DATA WITH NUMBER                   80901050
*     MDX     CMP ERR BRANCH                                         80901060
*                                                                    80901070
*  COUNT                                                             80901080
*     IX1=POINTER FOR SUMMARY TABLE                                  80901090
*     BSI    2 COUNT-TB   INCR COUNT MODULO 10,000.                 80901100
*                                                                    80901110
*  PRSUM                                                             80901120
*     BSI    2 PRSUM-TB   PRINT SUMMARY TABLE                       80901130
*                                                                    80901140
*  READ                                                              80901150
*     A REG.= SECTOR COUNT                                           80901160
*     BSI    2 READ-TB    READ SECTOR AT PRESENT                    80901170
**                         * CYL. COMPARE DATA IF                   80901180
**                         * NOCK ZERO.                             80901190
*     DC       NO.OF WORDS-BIT 0 EQUAL 1 MEANS USE                  80901200
**                          RANDOM NUMBERS FOR CMP                  80901210
*                          -BIT 1 MEANS TO READ AND                   01211
*                           RETURN WITHOUT CHECKING                  
*                           THE DSW OR THE DATA                      
*     DC       NUMBER      USED IN COMPARE                          80901220
*     DC       ADRS OF CMP ERROR RETURN                             80901230
*                                                                    80901240
*  RNDOM                                                             80901290
*     A REG.= NO. USED TO BUILD NEXT RANDOM NO.                      80901300
*     BSI    2 RNDOM-TB   GENERATE NO.                              80901310
*     A REG.= NEW RANDOM NO.                                         80901320
*                                                                    80901330
*  SECT                                                              80901340
*     A REG.=SECTOR ID IN HEX                                        80901350
*     BSI     SECT        CONVERT SID FOR PRINT                      80901360
*     00CC    00HS        CC=CYL# IN DECIMAL                            01370
**                          H = HEAD (0-1)                          80901380
```

```
**                          S = SECTOR (0-3)                          80901390
*                                                                     80901400
*  SETV                                                               80901410
*     A REG.=NO.TO BE SET IN COMA AREA                                80901420
*     COMA = WORD COUNT                                               80901430
*     BSI   2 SETV-TB      PRESET COMA+1 TO COMA+N+2                  80901440
**                         TO VALUE IN A REG.                        80901450
*                                                                     80901460
*  STMLS                                                              80901470
*     BSI  2  STMLS-TB     SAVE IX 1, IX 2 AND EXIT                   80901480
**                         * MONITOR. RETURN IS TO                   80901490
**                         * CALL+1.                                  80901500
*                                                                     80901510
*  STMSG                                                              80901520
*     BSI   2 STMSG-TB     PRINT MESSAGE                              80901530
**             DSW ERRORS.                                           80901540
*     DC       MESSAGE ID                                           80901550
*                                                                     80901560
*  VERFY                                                              80901610
*     BSI   2 VERFY-TB     SEEK A CYLINDER AND VER-                   80901620
**                         * IFY CYL. BY READING AT                  80901630
**                         * LEAST TWO SECTOR ID'S.                  80901640
*     DC       CYL # DESIRED                                        80901650
*     DC       RETURN ADRS IF CYL # INVALID OR                      80901660
**             BAD FROM 2315 DISK INITIALIZER.                       80901670
*                                                                     80901680
*  WRITE                                                              80901690
*     A REG.=SECTOR COUNT                                             80901700
*     BSI   2 WRITE-TB     WRITE IN PRESENT CYLINDER                  80901710
*     DC       NO.OF WORDS TO BE WRITTEN                            80901720
**                         IF BIT 0=1, DONT PRESET                   80901730
**                         THE I/O AREA                              80901740
**                         IF BIT 1=1 DON'T CHECK DSW                  01741
**                         FOR ERRORS AFTER THE WRITE                80901750
*     DC       DATA TO BE WRITTEN                                   80901760
*     DC       ADRS OF DSW ERROR RETURN                             80901770
*                                                                     80901830
*  XEQ                                                                80901840
*     BSI   2 XEQ-TB       EXECUTE I/O AND WAIT                       80901850
**                         * FOR INTERRUPT                           80901860
*                                                                     80901880
*  ZRLDV                                                              80901890
*     BSI   2 ZRLDV-TB     RELEASE DEVICE                             80901900
*                                                                     80901910
*  ZRQDV                                                              80901920
*     BSI   2 ZRQDV-TB     REQUEST DEVICE                             80901930
*                                                                     80901940
*□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80901950
*                                                                     80901960
*          MONITOR INTERFACE                                          80901970
*                                                                     80901980
*□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80901990
*                                                                     80902000
07FF        ORG     *+2047                                          80902010
*                                                                     80902020
*                   EQUATE TABLES                                     80902030
*                                                                     80902040
012C 0    BEGIN EQU     300                                         80902050
012D 0    START EQU     BEGIN+1                                     80902060
012E 0    END   EQU     START+1                                     80902070
012F 0    LOG   EQU     END+1                                       80902080
0130 0    ERROR EQU     LOG+1                                       80902090
0131 0    REQDV EQU     ERROR+1                                     80902100
0132 0    RELDV EQU     REQDV+1                                     80902110
0133 0    CRCK  EQU     RELDV+1                                     80902120
0134 0    MATO  EQU     CRCK+1                                      80902130
*                                                                     80902140
```



```
07FF 0 0900                                                           80902150
0800 0 0000                                                           80902160
0801 0 0000                                                             02170
0802 0 0000                                                           80902180
0803 0 0000                                                           80902190
0804 0 0000                                                           80902200
0805 0 0000                                                           80902210
0806 1 0A38                                                           80902220
0807 1 0A6D                                                           80902230
0808 1 0A7B                                                           80902240
*                                                                     80902250
*                  MONITOR INTERFACE TABLES                           80902260
*                                                                     80902270
PID    DC    /0900     1810 A/B DFT                                   80902280
RID    DC    0         ROUTINE ID                                     80902290
RAD    DC    0         ROUTINE ADRS                                   80902300
SW0    DC    0         SWITCH FUNCTION 00                             80902310
SW1    DC    0         SWITCH FUNCTION 01                             80902320
SW2    DC    0         SWITCH FUNCTION 10                             80902330
SW3    DC    0         SWITCH FUNCTION 11                             80902340
IPA    DC    ZIPA      INITIALIZATION ADRS                            80902350
LPA    DC    ZLPA      LOOP PROGRAM ADDRESS                             02360
EPA    DC    ZEPA      END PROGRAM ADDRESS                            80902370
*                                                                     80902380
MLSCF  DC    0         MAIN LINE SEQUENCE                             80902390
       DC    0         * CONTROL FIELD                                80902400
TERM   DC    /FFFF     TERMINATOR                                     80902410
       DC    PEND      LAST PROGRAM ADDRESS                           80902420
       DC    0         WORDS FOR MONITOR                              80902430
       DC    0         * USE                                          80902440
       DC    0         *                                              80902450
ONLIN  DC    0         NON-ZERO MEANS ON-LINE                         80902460
COMPT  DC    2         COMPATIBILITY SWITCH                           80902470
*                                                                     80902480
*                     EDIT FIELD                                      80902490
*                                                                     80902500
0812 0 FFFF                                                           80902510
0813 0 FFFF                                                           80902520
0814 0 FFFF                                                           80902530
0815 0 0000                                                           80902540
0816 0 0008                                                           80902550
0817 0 0010                                                           80902560
0818 0 0018                                                           80902570
0819 0 0638                                                           80902580
081A 0 0640                                                           80902590
081B 0 0648                                                           80902600
081C 0 0650                                                           80902610
081D 0 0000                                                           80902620
081E 0 0000                                                           80902630
081F 0 FFFF                                                           80902640
0820 0 FFFF                                                           80902650
0821 0 FFFF                                                           80902660
DDEF   DC    /FFFF     DDEF  ENTRY ONE                                80902670
       DC    /FFFF           ENTRY TWO                                80902680
       DC    /FFFF           ENTRY THREE                              80902690
CY000  DC    /0000     CYL 0                                          80902700
CY001  DC    /0008     CYL 1                                          80902710
CY002  DC    /0010     CYL 2                                          80902720
CY003  DC    /0018     CYL 3                                          80902730
CY199  DC    /0638     CYL 199                                        80902740
CY200  DC    /0640     CYL 200                                        80902750
CY201  DC    /0648     CYL 201                                        80902760
CY202  DC    /0650     CYL 202                                        80902770
RNDSK  DC    0         PATCH OPTION-RANDOM SEEK                       80902780
RNDWR  DC    0         PATCH OPTION RANDOM WRT                        80902790
BADCY  DC    -1                                                       80902800
       DC    -1                                                       80902810
       DC    -1                                                       80902820
*                                                                     
*                     BEGIN ROUTINE                                   
*                                                                     
0822 2 4480 012C BEG   BSI  I  BEGIN    EXIT TO MONITOR               
0824 1 07FF            DC      PID      ADRS OF PID                   
*□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 
*                                                                     
*                   INTERRUPT ROUTINE                                 
*                                                                     
*□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 
0825 0 0000                                                           
0826 0 0000                                                           
0827 0 0000                                                           
0828 0 C0FC                                                           
0829 1 6700 0833                                                      
082B 0 4818                                                           
082C 0 6BDC                                                           
082D 0 1010                                                           
082E 0 D0F6                                                           
082F 0 0816                                                           
0830 0 D015                                                           
0831 1 4C80 0827                                                      
*                                                                     
*                                                                     
0833 0 C012                                                           
INTSW  DC    0         INTERRUPT SWITCH                               
DVA    DC    0         AREA CODE STORAGE                              
INTR   DC    0         INTRPT ENTRY                                   
       LD      INTSW   GET INTRPT SWITCH                              
       LDX   L3 INTRB   SET RETURN IN CASE                            
       SKP     +-      SKIP IF EXPECT INTERRUPT                       
       STX   3 MLSCF   ELSE SET IN RETURN ADDRESS                     
       SLA     16      CLEAR INTERRUPT SWITCH                         
       STO     INTSW   *                                              
*                                                                     
       XIO     ZSNS    SENSE DSW                                      
       STO     ZSNS    STORE DSW IN TEMP LOC'N                        
       BSC   I INTR    EXIT ROUTINE                                   
*                                                                     
*                  PRINT ERROR - MAINLINE                             
*                                                                     
INTRB LD       ZSNS    GET INTRPT DSW                                 
```

```
0834 0 D018              STO     TBDSW     STORE FOR PRINT                    80902830
0835 1 6600 087F         LDX   L2 TB        SET POINTER TO TABLE               80902840
0837 0 4230              BSI     2 STMSG-TB PRINT ERROR MESSAGE                80902850
0838 0 0E02              DC        /0E02    MESSAGE ID                        80902860
0839 2 4C80 012D         BSC   I   START     BRANCH TO MONITOR                 80902870
                       *-------------------------------------------------------- 80902880
                       *-------------------------------------------------------- 80902890
                       *======================================================== 80902900
                       *                                                        80902910
                       *                    TABLE OF COMMON PROGRAM             80902920
                       *                    CONSTANTS                           80902930
                       *                                                        80902940
                       *======================================================== 80902950
087F 2                 TB      EQU     PID+128   POINTER USED TO REACH            02951
                       *                         * TABLE BY SHORT FORM
083B 0 0000            DDEFX DC        *-*       DDEF SELECTED BY SW FNC 2      80902960
083C 0 0404            XSKBK DC        /0404     FNC/MOD-SEEK OUT               80902970
083D 0 3000            H3000 DC        /3000     FORM NUMBER FOR PRSUM .        80902980
083E 0 1313            H1313 DC        /1313     CONSTANT HEX 1313              80902990
083F 0 0123            MASK  DC        /0123     ORDER OF SECTOR COUNTS         80903000
0840 0 0103            K259  DC        259       RANDOM GENER. MULTIPLIER       80903010
0841 0 0500            WRMOD DC        /0500     WRITE FUNCTION                 80903020
0842 0 0600            DSKMD DC        /0600     READ FNC/MOD                   80903030
0843 0 0680            RDCHK DC        /0680     READ-CHECK IOCC                80903040
0844 0 0700            SNRES DC        /0700     SENSE/RESET CONSTANT           80903050
0845 0 0080            H0080 DC        /0080     MASK USED BY STMSG RTN           03060
0846   0000                    BSS   E 0                                        80903070
0846 0 0000            ZSNS  DC        *-*       USED AS TEMP LOC'N     EVEN    80903080
0847 0 0000                  DC        *-*       SENSE-RESET IOCC       ODD     80903090
0848 0 0000            ZXIO  DC        *-*       COMMON IOCC STORAGE    EVEN    80903100
0849 0 0000                  DC        *-*       *                      ODD     80903110
084A 0 0000            SNXIO DC        *-*       IOCC-STORAGE-SENSE     EVEN    80903120
084B 0 0000                  DC        *-*                              ODD     80903130
084C 0 E5E5            HE5E5 DC        /E5E5     CONSTANT HEX E5E5              80903140
084D 0 0000            MSGO  DC        *-*       MESSAGE STORAGE        ODD     80903150
084E 0 0000                  DC        *-*       HEX/DEC FLAG           EVEN      03160
084F 0 0000            MSGID DC        *-*       MESSAGE ID             ODD     80903170
0850 0 0000            TBDSW DC        *-*       DSW                    EVEN    80903180
0851 0 0000            FILE# DC        *-*       FILE NUMBER            ODD     80903190
0852 0 0000            MOD3  DC        *-*       MODIFIERS              EVEN    80903200
0853 0 0000            MOD4  DC        *-*       *                      ODD     80903210
0854 0 0000            MOD5  DC        *-*       *                      EVEN    80903220
0855 0 0000            MOD6  DC        *-*       *                      ODD     80903230
0856 0 0000            MOD7  DC        *-*       *                      EVEN    80903240
0857 0 0000            BNTMP DC        *-*       TEMP STORAGE           ODD     80903250
0858 0 0000            PCYL# DC        *-*       PRESENT CYLINDER       EVEN    80903260
0859 0 0000            NCYL# DC        *-*       NEXT DESIRED CYLINDER  ODD     80903270
085A 0 0000            ERSK1 DC        *-*       SEEK RTN ERROR SW      EVEN    80903280
085B 0 0000            CNTB  DC        *-*       SEEK RTN-RETRY CTR B   ODD     80903290
085C 0 0000            RTRYA DC        *-*       RETRY CTRS             EVEN    80903300
085D 0 0000            RTRYB DC        *-*       *                      ODD     80903310
085E 0 0000            RDDSW DC        *-*       ERROR CTRS             EVEN    80903320
085F 0 0000            RDCMP DC        *-*       *                      ODD     80903330
0860 0 0001            K1    DC        1         CONSTANT 1                     80903340
0861 0 0002            K2    DC        2         CONSTANT 2                     80903350
0862 0 0003            K3    DC        3         CONSTANT 3                     80903360
0863 0 0004            K4    DC        4         CONSTANT 4                     80903370
0864 0 0007            K7    DC        7         CONSTANT 7                     80903380
0865 0 0008            K8    DC        8         CONSTANT 8             ODD     80903390
0866 0 00CA            K202  DC        202       CONSTANT 202                   80903400
0867 0 00CB            K203  DC        203       CONSTANT 203                   80903410
0868 0 014B            K331  DC        331       CONSTANT                       80903420
0869 0 2710            K10TH DC        10000     CONSTANT 10000 DEC             80903430
086A 0                 SUMRY EQU       *         SUMMARY TABLE ORIGIN           80903440
086A 0 0000            PRSW  DC        *-*       IF NON ZERO-BYPASS PRT         80903450
086B 0 0000            PSSCT DC        *-*       PASS COUNT                     80903460
086C 0 0000            SKCNT DC        *-*       NUMBER OF SEEKS                80903470
086D 0 0000            SFTSK DC        *-*       NUMBER SOFT SK ERRORS          80903480
```



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086E 0 0000            HRDSK DC        *-*       NUMBER HARD SK ERRORS          80903490
086F 0 0000            RDCNT DC        *-*       NUMBER OF READS                80903500
0870 0 0000            SFTRD DC        *-*       NUMBER SOFT RD ERRORS          80903510
0871 0 0000            HRDRD DC        *-*       NUMBER HARD RD ERRORS          80903520
0872 0 0000            WRCNT DC        *-*       NUMBER OF WRITES               80903530
0873 0 0000            SFTWR DC        *-*       NUMBER SOFT WR ERRORS          80903540
0874 0 0000            HRDWR DC        *-*       NUMBER HARD WR ERRORS          80903550
0875 0 0000            WRLNG DC        *-*       AVG SECT LNGTH/WRT 400         80903560
000C 0                 SMLNG EQU       *-SUMRY   LENGTH OF SUMMARY TABLE        80903570
0876 0 0000            FRNSK DC        *-*       FIRST RANDOM SK ISSUED         80903580
0877 0 0000            PRNSK DC        *-*       LAST RANDOM SK ISSUED(FXD)     80903590
0878 0 0000            FRN1  DC        *-*       FIRST RANDOM # RTN 9           80903600
0879 0 0000            LRN1  DC        *-*       LAST RANDOM # RTN 9(FXD)       80903610
087A 0 0000            FRN2  DC        *-*       FIRST RANDOM # RTN 10          80903620
087B 0 0000            LRN2  DC        *-*       LAST RANDOM # RTN 10(FXD)      80903630
087C 0 0000            CNTA  DC        *-*       SEEK RTN-RETRY CTR             80903640
087D 0 0000            RNDCK DC        *-*       TEMP STORAGE                   80903650
087E 0 0000            NOCK  DC        *-*       BYPASS RD CKS IF NON 0         80903660
087F 0 0000            LNGTH DC        *-*       RECORD LENGTH STORAGE          80903670
0880 0 0000            INDEX DC        *-*       INDEX POINTER                  80903680
0881 0 0000            ERCT  DC        *-*       CMP RTN ERROR CTR              80903690
0882 0 0000                  DC        *-*       TEMP STORAGE-CMP RTN   EVEN    80903700
0883 0 0000            S#B   DC        *-*       *                              80903710
0884 0 0000                  DC        *-*       *                              80903720
0885 0 0000            IDS#B DC        *-*       PRESENT SECT/CYL ID    ODD     80903730
0886 0 0000            LPRNT DC        *-*       LAST WORD PRINTED              80903740
0887 0 0000            ZCNT  DC        *-*       DELAY COUNT                    80903750
0888 0 0000            RTCNT DC        *-*       RETRY COUNTER                  80903760
0889 0 0000            WRRTY DC        *-*       RETRY COUNTER                  80903770
088A 0 0000            WRERR DC        *-*       ERROR SWITCH                   80903780
088B 0 0000            RTNER DC        *-*       RTN ERROR COUNTER              80903790
088C 0 0000            CMPTM DC        *-*       TEMP STORAGE                   80903800
088D 0 0000            MODEL DC        *-*       NON ZERO FOR FAST ACCESS         03810
088E 0 00A0            H00A0 DC        /00A0     MODEL A                        80903820
088F 0 00B0            H00B0 DC        /00B0     MODEL B -FAST ACCESS             03830
0890 0 000A            TEN   DC        10        CONSTANTS USED TO CONVERT
0891 0 0064            HUNDR DC        100       * HEX TO DECIMAL
0892 0 03E8            THOUS DC        1000      * *                            80903840
                       *                                                      80903850
0893 1 0814            ADDEF DC        DDEF+2    USED TO CREATE DEVICE DDEF   80903860
0894 1 08C4            ADCMA DC        COMA      ADRS OF COMA                   03870
0895 0 FFF3            ADDIF DC        ZIPB-ZIPD USED TO CREATE MLSCF ADDR.   80903880
0896 1 0A68            ADZIP DC        ZIPD      INIT. RE-ENTRY ADRS          80903890
0897 0 0000            CKLK  DC        *-*       ENTRY TO CK LOCK OPTION      80903900
0898 1 4C00 0F12             BSC   L   CKLKE     * RTN                        80903910
                       *                                                      80903920
089A 0 0000            CKPRT DC        *-*       CHECK PRINT-ALL-ERRORS OPT   80903930
089B 1 4C00 0F20             BSC   L   CKPRE     ENTRY POINT                  80903940
                       *                                                      80903950
089D 0 0000            CNTLE DC        *-*       BRANCH TO CONTROL            80903960
089E 1 4C00 0AE1             BSC   L   CNTL      * ROUTINE                    80903970
                       *                                                      80903980
08A0 0 0000            COUNT DC        *-*       ENTRY TO INCR SUMMARY        80903990
08A1 1 4C00 0F64             BSC   L   COUNE     * COUNT RTN                  80904000
                       *                                                      80904010
08A3 0 0000            READ  DC        *-*       ENTRY TO DISK READ           80904020
08A4 1 4C00 0DD3             BSC   L   RDEN      * RTN                        80904030
                       *                                                      80904040
08A6 0 0000            RNDOM DC        *-*       ENTRY TO GENERATE            80904050
08A7 1 4C00 0F09             BSC   L   RNDME     * RANDOM NUMBER RTN          80904060
                       *                                                      80904070
08A9 0 0000            SETV  DC        *-*       ENTRY TO SET I/O AREA        80904080
08AA 1 4C00 0F2A             BSC   L   SETVE     * RTN                        80904090
                       *                                                      80904100
08AC 0 0000            STMLS DC        *-*       ENTRY TO SAVE INDEXING       80904110
08AD 1 4C00 0CF7             BSC   L   STMLE     * AND EXIT TO MONITOR        80904120
                       *                                                      80904130
08AF 0 0000            STMSG DC        *-*       ENTRY TO SET UP AND
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```
08B0 1 4C00 0F6D        BSC  L  STMSE      * PRINT A MESSAGE                80904140
                        *                                                    80904150
08B2 0 0000             TEXIT DC     *-*     ENTRY OF CALL                   80904160
08B3 1 4C00 0F33              BSC  L  DFTXT   TO TERMINATE DFT                80904170
                        *                                                    80904180
08B5 0 0000             VERFY DC     *-*     ENTRY TO SEEK A CYL AND         80904190
08B6 1 4C00 0D03              BSC  L  VRFYE   * VERIFY THE SEEK               80904200
                        *                                                    80904210
08B8 0 0000             WRITE DC     *-*     ENTRY TO WRITE DATA             80904220
08B9 1 4C00 0EC0              BSC  L  WRTEN   * ON THE DISK                   80904230
                        *                                                    80904240
08BB 0 0000             XEQ   DC     *-*     ENTRY TO EXECUTE AN             80904250
08BC 1 4C00 0CB9              BSC  L  XEQE    * XIO INSTRUCTION               80904260
                        *                                                    80904270
08BE 0 0000             ZRLDV DC     *-*     ENTRY TO RELEASE                80904280
08BF 1 4C00 0CEE              BSC  L  RLDVE   * A DEVICE                      80904290
                        *                                                    80904300
08C1 0 0000             ZRQDV DC     *-*     ENTRY TO REQUEST                80904310
08C2 1 4C00 0CAC              BSC  L  RQDV    * A DEVICE                      80904320
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80904330
                        *                                                    80904340
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80904350
                        *------------------------------------------------------ 80904360
                        *                                                    80904370
08C4   0174             COMA  BSS  E  372       THIS SETS BDCYL EVEN IF      80904380
0A38 0                  ENDCM EQU  *            *  BSS NUMBER IS EVEN        80904390
                        *                                                    80904400
                        *------------------------------------------------------ 80904410
                        *------------------------------------------------------ 80904420
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80904430
                        *                                                    80904440
                        *                INITIALIZATION ROUTINE              80904450
                        *                                                    80904460
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80904470
0A38 0 0000             ZIPA  DC     0          ENTRY POINT                  80904480
0A39 0 4033                   BSI    ZLPA       CLEAR SAME THINGS AS LOOP    80904490
                        *                                                    80904500
                        *          CLEAR SUMMARY TABLE                       80904510
                        *                                                    80904520
0A3A 0 630C                   LDX    3 SMLNG    LENGTH OF SUMMARY TABLE      80904530
0A3B 1 D700 0869       ZIPL   STO    L3 SUMRY-1 CLEAR SUMMARY TABLE          80904540
0A3D 0 73FF                   MDX    3 -1       DECR POINTER                 80904550
0A3E 0 70FC                   B      ZIPL       LOOP                         80904560
                        *                                                    80904570
0A3F 0 C283                   LD     2 SW0-TB   CLEAR TERMINATE DFT BIT      80904580
0A40 0 1801                   SRA    1          CLEAR BIT 15                 80904590
0A41 0 1001                   SLA    1          *                            80904600
0A42 0 D283                   STO    2 SW0-TB   PUT BACK IN SW0              80904610
0A43 0 C285                   LD     2 SW2-TB   GET SW FNC 10                80904620
0A44 0 D2D1                   STO    2 TBDSW-TB IN CASE PRINT                80904630
0A45 0 6302                   LDX    3 2        INITIAL VALUE                80904640
0A46 0 4820                   SKP    Z          SKIP IF NO BITS SET          80904650
0A47 0 1340                   SLCA   3 0        ELSE SHIFT LEFT AND COUNT    80904660
0A48 0 1001                   SLA    1          GET RID OF SIGN BIT          80904670
0A49 0 4820                   SKP    Z          SKIP IF ZERO                 80904680
0A4A 0 6302                   LDX    3 2        ELSE USE INITIAL VALUE       80904690
0A4B 0 6B21                   STX    3 ZLPA     TEMP STORAGE                 80904700
0A4C 0 C214                   LD     2 ADDEF-TB ADRS OF DDEF+2               80904710
0A4D 0 901F                   S      ZLPA       CREATE DDEF ENTRY            80904720
0A4E 0 D2BC                   STO    2 DDEFX-TB TEMPORARY                    80904730
0A4F 1 C480 083B              LD   I DDEFX      PICK UP DDEF ENTRY           80904740
0A51 0 D2BC                   STO    2 DDEFX-TB STORE FOR REQ/REL ROUTINES   80904750
0A52 0 D2D2                   STO    2 FILE#-TB IN CASE PRINT                80904760
0A53 0 82E1                   A      2 K1-TB    TEST FOR /FFFF               80904770
0A54 0 4820                   SKP    Z          SKIP IF VALID EDIT
0A55 0 C216                   LD     2 ADDIF-TB POINT TO ZIPD
0A56 0 8217                   A      2 ADZIP-TB IF SKIP-POINT TO ZIPB
0A57 0 D28B                   STO    2 MLSCF+1-TB SET MLSCF ENTRY FOR RETURN
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0A58 0 D282                   STO    2 RAD-TB   SET RTN ADDRESS
0A59 1 4C80 0A38              BSC  I ZIPA       EXIT INITIALIZATION
                        *                                                    80904810
                        *          REQUEST/RELEASE DEVICE TO                 80904820
                        *          GET AREA CODE IN DVA                      80904830
                        *                                                    80904840
0A5B 1 6600 087F       ZIPB   LDX    L2 TB      SET UP TABLE POINTER         04850
0A5D 0 4242                   BSI    2 ZRQDV-TB REQUEST DEVICE
0A5E 0 423F                   BSI    2 ZRLDV-TB RELEASE                      80904860
                        *                                                    80904870
                        *          CREATE IOCC'S FOR SENSE DSW               80904880
                        *                                                    80904890
0A5F 0 C2A7                   LD     2 DVA-TB   GET DEVICE AREA CODE         80904900
0A60 0 EAC5                   OR     2 SNRES-TB SENSE DSW IOCC               80904910
0A61 0 D2CC                   STO    2 SNXIO+1-TB *                          80904920
0A62 0 EAE1                   OR     2 K1-TB    SENSE-RESET DSW              80904930
0A63 0 D2C8                   STO    2 ZSNS+1-TB *  FOR INTERUPT RTN         80904940
                        *                                                    80904950
                        *            AREA CODE =     4    8    9            80904960
                        *            DVA       =  2000 4000 4800            80904970
                        *            A REGISTER=  2701 4701 4F01            80904980
0A64 0 8000                   A      ZIPC       =  188D 188D 188D            80904990
                        *            SUM TOTAL =  3E8E 5E8E 678E            80905000
0A65 0 188D            ZIPC   SRT    13         =  0001 0002 0003            80905010
                        *                                                    80905020
0A66 0 D2D2                   STO    2 FILE#-TB SET FILE NUMBER              80905030
0A67 0 7021                   MDX    PRECN      GO TO PRE-CONTROL RTN
                        *                                                    80905080
0A68 1 6600 087F       ZIPD   LDX    L2 TB      GET TABLE ADRS TO IX2        80905090
0A6A 0 4230                   BSI    2 STMSG-TB PRINT MESSAGE                80905100
0A6B 0 5C00                   DC     /5C00      FORM NUMBER/MID              80905110
0A6C 0 4233                   BSI    2 TEXIT-TB TERMINATE DFT                80905120
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80905130
                        *                                                    80905140
                        *                LOOP PROGRAM ENTRY                  80905150
                        *                                                    80905160
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80905170
0A6D 0 0000            ZLPA   DC     0          ENTRY POINT                  80905180
0A6E 1 6600 087F              LDX    L2 TB      INDEX EQUAL ADRS COMMON TB   80905190
0A70 0 C283                   LD     2 SW0-TB   GET FNC SW 00                80905200
0A71 1 4C04 0A76              BOD    ZLPB       BRANCH # BIT 15 SET          80905210
0A73 0 C220                   LD     2 CNTLE+2-TB SET ADRS CONTROL ROUTINE   80905220
0A74 0 D28B                   STO    2 MLSCF+1-TB SET IN MLSCF               80905230
0A75 0 D282                   STO    2 RAD-TB   SET FOR MESSAGES AND ERROR   80905240
                        *                                                    80905250
0A76 0 1010            ZLPB   SLA    16         CLEAR A REG                  80905260
0A77 0 D281                   STO    2 RID-TB   CLEAR RID                    80905270
0A78 0 D2EB                   STO    2 PRSW-TB  CLEAR NO-PRINT SWITCH        80905280
0A79 1 4C80 0A6D              BSC  I ZLPA       EXIT                         80905290
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80905300
                        *                                                    80905310
                        *                END PROGRAM ROUTINE                 80905320
                        *                                                    80905330
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80905340
0A7B 0 0000            ZEPA   DC     0          ENTRY POINT                  80905350
0A7C 1 6600 087F              LDX    L2 TB      IX=TABLE ADRS                80905360
0A7E 1 2C40 08C5              STS    L  COMA+1,/40 CLEAR STORAGE PROTECT BIT  80905370
                        *                                                    80905380
0A80 0 6300                   LDX    3 0        SET DELAY COUNTER            80905481
0A81 0 7301                   MDX    3 +1       ADV DELAY                    80905482
0A82 0 70FE                   MDX      *-2      LOOP UNTIL ZERO              80905383
                        *                                                    80905384
0A83 0 423F                   BSI    2 ZRLDV-TB RELEASE DEVICE               80905390
0A84 0 1010                   SLA    16         CLEAR A REG.                 80905400
0A85 0 D2A6                   STO    2 INTSW-TB CLEAR INT SWITCH             80905410
0A86 1 4C80 0A7B              B    I ZEPA       EXIT TO MONITOR              80905420
                        *                                                    80905430
                        *------------------------------------------------------ 80905440
```

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                        *-------------------------------------------------- 80905450
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80905460
                        *                                                  80905470
                        *     PRE-CONTROL ROUTINE                          80905480
                        *                                                  80905490
                        *                                                  80905500
                        *     THIS ROUTINE DETERMINES WHICH MODEL (A OR B)     05510
                        *     IS BEING TESTED. IF FAST ACCESS, THE VARIABLE    05520
                        *     'MODEL' IS SET NON-ZERO.  THE PROPER FILE    80905530
                        *     ID IS CREATED ALSO (A1,A2,A3,B1,B2,B3).          05540
                        *     THE SECTOR COUNT IN BITS 14-15 IN THE DSW    80905550
                        *     ARE CHECKED FOR SEQUENTIAL STEPPING.         80905560
                        *                                                  80905570
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80905580
                        *                                                  80905590
0A88 0 CEDC             HCEDC DC      /CEDC      CE DISK PACK              80905600
0A89 0 40F1             PRECN BSI     ZEPA       INITIALIZE PROGRAM        80905610
0A8A 0 0ACB                   XIO   2 SNXIO-TB   SENSE DSW                 80905620
0A8B 0 D2D1                   STO   2 TBDSW-TB   SAVE FOR PRINT            80905630
0A8C 0 E2E4                   AND   2 K4-TB      GET BIT 13                80905640
0A8D 0 D20E                   STO   2 MODEL-TB   NON-ZERO MEANS FAST ACCESS     05650
0A8E 0 4820                   SKP     Z          SKIP IF ZERO              80905660
0A8F 0 C210                   LD    2 HOOBO-TB   ELSE GET FILE TYPE            05670
0A90 0 4808                   SKP     +          SKIP FOR FAST ACCESS          05680
0A91 0 C20F                   LD    2 HOOAO-TB   GET FILE TYPE             80905690
0A92 0 EAD2                   OR    2 FILE#-TB   COMBINE WITH UNIT DESIRED  80905700
0A93 0 D2D2                   STO   2 FILE#-TB   SET FOR PRINT             80905710
0A94 0 4230                   BSI   2 STMSG-TB   PRINT A MESSAGE           80905720
0A95 0 5A00                   DC      /5A00      FORM NUMBER/MID           80905730
0A96 0 C291                   LD    2 ONLIN-TB   CHECK ON LINE SWITCH      80905740
0A97 1 4C20 0AB9              BNZ     PRECH      BRANCH IF ON LINE         80905750
0A99 0 6780 0A2E              LDX   I3 END       CHECK OVERLAP SWITCH      80905760
0A9B 0 C780 0000              LD    I3 15        *                         80905770
0A9D 1 4C20 0AB9              BNZ     PRECH      BRANCH IF IN OVERLAP      80905780
0A9F 0 63FC                   LDX     3 -4       FOUR SECTORS              80905790
0AA0 0 6BDA                   STX     3 ZEPA     TEMPORARY LOC'N           80905800
                        *                                                  80905810
0AA1 0 6700 0AD0        PRECA LDX   L3 2000      TIMEOUT COUNT             80905820
0AA3 0 0ACB             PRECC XIO     2 SNXIO-TB   SENSE DSW               80905830
0AA4 0 F0D6                   EOR     ZEPA       TEST FOR NEXT SECTOR CNT  80905840
0AA5 0 E2E3                   AND   2 K3-TB      SAVE BITS 14-15           80905850
0AA6 1 4C18 0AAA              BZ      PRECB      BR IF ZERO                80905860
0AA8 0 73FF                   MDX     3 -1       ELSE COUNT TIME           80905870
0AA9 0 70F9                   B       PRECC      LOOP                      80905880
                        *                                                  80905890
0AAA 0 0ACB             PRECB XIO     2 SNXIO-TB   SENSE DSW               80905900
0AAB 0 E2E3                   AND   2 K3-TB      SAVE SECTOR COUNT BITS    80905910
0AAC 0 100C                   SLA     12         MOVE SECTOR COUNT IN Q    80905920
0AAD 0 18DC                   RTE     28         *  AS A HEX DIGIT         80905930
0AAE 1 7401 0AB7              MDX   L ZEPA,1     INCR EXPECTED SECTOR      80905940
0AB0 0 70F0                   B       PRECA      LOOP                      80905950
                        *                                                  80905960
0AB1 0 1090                   SLT     16         SET Q IN A                80905970
0AB2 0 D2D3                   STO   2 MOD3-TB    SAVE IN CASE PRINT        80905980
0AB3 0 F2C0                   EOR   2 MASK-TB    CK FOR CORRECT            80905990
0AB4 1 4C18 0AB9              BZ      PRECH      BRANCH IF CORRECT         80906000
0AB6 0 4230                   BSI   2 STMSG-TB   PRINT ERROR               80906010
0AB7 0 9E1F                   DC      /9E1F      FORM/MSG ID               80906020
0AB8 0 4233                   BSI   2 TEXIT-TB   TERMINATE DFT             80906030
0AB9 0 C2BD             PRECH LD      2 XSKBK-TB   GET SEEK-TOWARD-HOME IOCC 80906040
0ABA 0 1890                   SRT     16         PUT IN Q                  80906050
0ABB 0 C20E                   LD    2 MODEL-TB   GET MODEL SWITCH          80906060
0ABC 0 F2E4                   EOR   2 K4-TB      A=ZERO MEANS FAST ACCESS      06070
0ABD 0 4820                   SKP     Z          SKIP IF ZERO              80906080
0ABE 0 C2E7                   LD    2 K202-TB    GO TO HOME FOR SLOW ACCESS    06090
0ABF 0 DAC9                   STD   2 ZXIO-TB    SET FOR XIO               80906100
0AC0 0 423C                   BSI   2 XEQ-TB     XEQ ROUTINE               80906110
0AC1 0 C28C                   LD    2 TERM-TB    SET WORD 1 TO 'FFFF'      80906120
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0AC2 0 D246                   STO   2 COMA+1-TB  *                         80906130
0AC3 0 10A0                   SLT     32         CLEAR A AND Q             80906140
0AC4 0 DAD9                   STD   2 PCYL#-TB   CLEAR PRESENT AND NEW CYL  80906150
0AC5 0 4224                   BSI   2 READ-TB    READ SECTOR ZERO          80906160
0AC6 0 0141                   DC      321        WORD COUNT                80906170
0AC7 0 1313                   DC      /1313      DATA EXPECTED             80906180
0AC8 1 0AC9                   DC      PRECJ      ERROR RETURN              80906190
0AC9 0 4236             PRECJ BSI     2 VERFY-TB   SEEK CYL. 199           80906200
0ACA 0 00C7                   DC      199        *                         80906210
0ACB 1 0F33                   DC      DFTXT      ERROR RETURN              80906220
                        *                                                  80906230
0ACC 0 C2E3                   LD    2 K3-TB      GET 3                     80906240
0ACD 0 4224                   BSI   2 READ-TB    READ CE HISTORY TRACK         06250
0ACE 0 401B                   DC      27+/4000   READ 27 WORDS W/O CKING       06260
                        *                        * DSW OR DATA                 06270
0ACF 0 C247                   LD    2 COMA+2-TB  GET WORD 2                80906280
0AD0 0 F0B7                   EOR     HCEDC      CMP WITH S/B              80906290
0AD1 1 4C18 0AD6              BZ      PRECG      BRANCH IF OK              80906300
0AD3 0 4230                   BSI   2 STMSG-TB   ELSE PRINT MESSAGE         80906310
0AD4 0 5C01                   DC      /5C01      FORM NUMBER/MID           80906320
0AD5 0 4233                   BSI   2 TEXIT-TB   TERMINATE DFT             80906330
0AD6 1 6780 08C7        PRECG LDX   I3 COMA&3    NO BAD SECTORS-NOT CYLS   80906340
0AD8 1 6500 081F              LDX   L1 BADCY     ADRS OF BAD CYL TABLE     80906350
                        *                                                  80906360
0ADA 1 C700 08C6        PRECF LD    L3 COMA&2    GET BAD SECTOR NO.        80906370
0ADC 0 1883                   SRT     3          RIGHT JUSTIFY             80906380
0ADD 0 D100                   STO     1 0        STORE IN BAD CYL TABLE    80906390
0ADE 0 7101                   MDX     1 1        INCR POINTER              80906400
0ADF 0 73F8                   MDX     3 -8       DECR SECTOR COUNTER       80906410
0AE0 0 70F9                   B       PRECF      LOOP                      80906420
                        *                                                  80906430
                        *                                                  80906440
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80906450
                        *                                                  80906460
                        *                CONTROL ROUTINE                   80906470
                        *                                                  80906480
                        *     THIS ROUTINE SELECTS A TEST ROUTINE AND      80906490
                        *     BRANCHES CONTROL TO IT.                      80906500
                        *                                                  80906510
                        *     WHEN ALL ROUTINES ARE COMPLETE THIS ROUTINE  80906520
                        *     BRANCHES TO MONITOR END ROUTINE.             80906530
                        *                                                  80906540
                        *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80906550
0032 0                  LPCNT EQU     50         ROUTINE LOOP COUNT        80906560
0AE1 0 4099             CNTL  BSI     ZEPA       INITIALIZE PROGRAM        80906570
0AE2 0 C283                   LD    2 SWO-TB     GET SW FNC 0              80906580
0AE3 1 4C04 0F33              BOD     DFTXT      BRANCH # TERM DFT SW ON   80906590
0AE5 0 C284                   LD    2 SW1-TB     GET SW FNC 1              80906600
0AE6 1 4C20 0AF8              BNZ     CNTLD      BRANCH IF NO RTN SELECTED 80906610
                        *                                                  80906620
0AE8 0 C281                   LD    2 RID-TB     GET RTN ID                80906630
0AE9 0 82E1                   A     2 K1-TB      ADD 1                     80906640
0AEA 0 D281                   STO   2 RID-TB     SAVE                      80906650
0AEB 0 9013                   S       RTTBL      CK FOR VALID              80906660
0AEC 1 4C10 0F38              BNN     PRSUM      BRANCH IF COMPLETE        80906670
                        *                                                  80906680
0AEE 1 6580 0800        CNTLB LDX   I1 RID         IX EQUAL RTN ID           80906690
0AF0 1 C500 0AFF              LD    L1 RTTBL     GET RTN ADRS              80906700
                        *                                                  80906710
0AF2 0 D282                   STO   2 RAD-TB     SAVE RTN ADRS             80906720
0AF3 0 6132                   LDX   1 LPCNT      SET LOOP COUNT            80906730
0AF4 0 1010                   SLA     16         CLEAR ROUTINE ERROR SW    80906740
0AF5 0 D20C                   STO   2 RTNER-TB   *                         80906750
0AF6 1 4C80 0801              B   I   RAD        BRANCH TO TEST RTN        80906760
                        *                                                  80906770
0AF8 0 D281             CNTLD STO   2 RID-TB     SET IN RTN ID             80906780
0AF9 0 9005                   S       RTTBL      CK FOR VALID              80906790
0AFA 1 4C28 0AEE              BN      CNTLB      BRANCH IF OK              80906800
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0AFC 0 4230          BSI   2 STMSG-TB   ELSE PRINT MESSAGE                80906810
0AFD 0 5C02          DC     /5C02       FORM NUMBER/MID                   80906820
0AFE 0 4233          BSI   2 TEXIT-TB   TERMINATE DFT                     80906830
                     *                                                     80906840
                     *                ROUTINE ADDRESS TABLE                80906850
                     *                                                     80906860
0AFF 0 000F  RTTBL   DC     LRTN-RTTBL   LENGTH OF RTN ADRS TABLE          80906870
0B00 1 0B0E          DC     RTN1         ADDRESS OF TEST ROUTINE 1         80906880
0B01 1 0B3D          DC     RTN2                                  2          80906890
0B02 1 0B5C          DC     RTN3                                  3          80906900
0B03 1 0B7F          DC     RTN4                                  4          80906910
0B04 1 0B90          DC     RTN5                                  5          80906920
0B05 1 0B9A          DC     RTN6                                  6          80906930
0B06 1 0BA5          DC     RTN7                                  7          80906940
0B07 1 0BCC          DC     RTN8                                  8          80906950
0B08 1 0BF2          DC     RTN9                                  9          80906960
0B09 1 0BF8          DC     RTN10                                 10         80906970
0B0A 1 0C31          DC     RTN11                                 11         80906980
0B0B 1 0C4E          DC     RTN12                                 12         80906990
0B0C 1 0BA0          DC     RTN13                                 13         80907000
0B0D 1 0BA2          DC     RTN14                                 14         80907010
0B0E 0       LRTN    EQU    *            END OF RTN TABLE                  80907020
                     *-------------------------------------------------    80907030
                     *-------------------------------------------------    80907040
                     *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□    80907050
                     *                                                     80907060
                     *                TEST ROUTINE ONE                     80907070
                     *                                                     80907080
                     *     THIS ROUTINE WILL CHECK INVALID ADDRESS         80907090
                     *     REJECTION (FAST ACCESS) AND CE DSW BITS.        07100
                     *                                                     80907110
                     *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□    80907120
                     *                                                     80907130
0B0E 0 C20E  RTN1    LD     2 MODEL-TB   GET DISK MODEL                    80907140
0B0F 0 4820          SKP      Z          SKIP IF SLOW ACCESS               07150
0B10 0 C28C          LD     2 TERM-TB    GET FFFF                          80907160
0B11 0 F2D1          EOR    2 TBDSW-TB   MAKE BIT 13 ZERO                  80907170
0B12 0 100D          SLA      13         CHECK BIT 13                      80907180
0B13 1 4C10 0B17     BNN      RTN1Q      BRANCH IF CORRECT                 80907190
0B15 0 4230          BSI    2 STMSG-TB   PRINT ERROR                       80907200
0B16 0 5E14          DC       /5E14      MESSAGE ID                        80907210
0B17 0 C20E  RTN1Q   LD     2 MODEL-TB   GET DISK MODEL                    80907220
0B18 1 4C18 0B27     BZ       RTN1G      BRANCH IF SLOW ACCESS             07230
                     *                                                     80907240
0B1A 0 C2BD          LD     2 XSKBK-TB   SK TOWARD HOME IN CASE            07250
                     *                    DEVICE IS SLOW ACCESS
0B1B 0 1890          SRT      16         TO Q REG.                         80907260
0B1C 0 D245          STO    2 COMA-TB    DON'T CHECK BUSY AFTER XIO        80907270
0B1D 0 C2E8          LD     2 K203-TB    CONSTANT=203                      80907280
0B1E 0 DAC9          STD    2 ZXIO-TB    SET FOR XIO IN XEQ                80907290
0B1F 0 423C          BSI    2 XEQ-TB     ISSUE INVALID SEEK                80907300
                     *                                                     80907310
0B20 1 4C10 0B25     BNN      ERR1       BRANCH TO ERROR                   80907320
0B22 0 100A          SLA      10         CK INVALID BIT                    80907330
0B23 1 4C28 0B27     BN       RTN1G      BRANCH IF NO ERROR                80907340
                     *                                                     80907350
                     *                INVALID ADRS BIT NOT ON              80907360
                     *                                                     80907370
0B25 0 4230  ERR1    BSI    2 STMSG-TB   PRINT ERROR                       80907380
0B26 0 5E1B          DC       /5E1B      MSG ID                            80907390
                     *                                                     80907400
0B27 0 C291  RTN1G   LD     2 ONLIN-TB   GET ON-LINE SWITCH                80907410
0B28 1 4C20 0B3A     BNZ      RTN10      BRANCH IF ON LINE NOW             80907420
0B2A 0 C2E1          LD     2 K1-TB      IOCC MODIFIER                     80907430
0B2B 0 EAA7          OR     2 DVA-TB     *                                 80907440
0B2C 0 D2CA          STO    2 ZXIO+1-TB  *                                 80907450
0B2D 0 0AC9          XIO    2 ZXIO-TB    ISSUE CE MODE                     80907460
                     *                                                     80907470
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0B2E 0 0ACB          XIO    2 SNXIO-TB   SENSE DSW                         80907480
0B2F 0 D2D1          STO    2 TBDSW-TB   STORE IN CASE PRINT               80907490
0B30 0 C2A7          LD     2 DVA-TB     SET OUT OF CE MODE IOCC           80907500
0B31 0 D2CA          STO    2 ZXIO+1-TB  *                                 80907510
0B32 0 0AC9          XIO    2 ZXIO-TB    ISSUE XIO                         80907520
0B33 0 C2D1          LD     2 TBDSW-TB   GET SAVED DSW                     80907530
                     *                                                     80907540
                     *          CE NOT RDY/BUSY BITS SHOULD NOT BE ON      80907550
                     *                                                     80907560
0B34 0 1803          SRA      3          CHECK BITS 11-12                  80907570
0B35 0 E2E3          AND    2 K3-TB      TEST THE BITS FOR ZERO            80907580
0B36 1 4C18 0B3A     BZ       RTN10      BRANCH IF OK                      80907590
0B38 0 4230          BSI    2 STMSG-TB   PRINT ERROR                       80907600
0B39 0 5E1C          DC       /5E1C      MSG ID                            80907610
                     *                                                     80907620
                     *                                                     80907630
0B3A 0 71FF  RTN10   MDX    1 -1         DECR RTN LOOP CNTR                80907640
0B3B 0 70D2          B        RTN1       LOOP RTN                          80907650
0B3C 0 421E          BSI    2 CNTLE-TB   EXIT RTN                          80907660
                     *                                                     80907670
                     *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□    80907680
                     *                                                     80907690
                     *                TEST ROUTINE TWO                     80907700
                     *                                                     80907710
                     *     THIS ROUTINE READS ONE WORD INTO A STORAGE       80907720
                     *     PROTECTED WORD AND CHECKS THE DSW FOR S. P. V    80907730
                     *     BEING ON.  THE PROTECTED WORD IS THEN            80907740
                     *     CHECKED TO BE SURE NO DATA WAS READ INTO IT.     80907750
                     *                                                     80907760
                     *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□    80907770
0B3D 0 C291  RTN2    LD     2 ONLIN-TB   GET ON-LINE SWITCH                80907780
0B3E 1 4C20 0AE1     BNZ      CNTL       EXIT RTN IF PRG ON-LINE           80907790
0B40 0 C28C  RTN2L   LD     2 TERM-TB    SET WORD TO FOXES                 80907800
0B41 0 D246          STO    2 COMA+1-TB  *                                 80907810
0B42 1 2C41 08C5     STS  L   COMA+1,/41 SET STO PROTECT BIT               80907820
                     *                                                     80907830
0B44 0 1010          SLA      16         SECTOR ZERO                       80907840
0B45 0 4224          BSI    2 READ-TB    CALL READ RTN                     07850
0B46 0 4001          DC       1+/4000    ONE WORD-NO DSW CHECK             07860
0B47 1 2C40 08C5     STS  L   COMA&1,/40 CLEAR STORAGE PROTECT             80907870
                     *                                                     80907880
0B49 0 CAC7          LDD    2 ZSNS-TB    GET INTRPT DSW                    80907890
0B4A 1 4C30 0B4F     BP       RTN2D      BR IF 'ANY ERROR' IND NOT         80907900
0B4C 0 1086          SLT      6          TEST SPV                          80907910
0B4D 1 4C28 0B51     BN       RTN2A      BR IF NO SPV IND. IN DSW          80907920
                     *                                                     80907930
0B4F 0 4230  RTN2D   BSI    2 STMSG-TB   NO SPV IND. IN DSW                 80907940
0B50 0 5E1D          DC       /5E1D      MESSAGE ID                        80907950
                     *                                                     80907960
0B51 0 C246  RTN2A   LD     2 COMA+1-TB  TEST COMA+1 FOR FOXES             80907970
0B52 0 D2D3          STO    2 MOD3-TB    IN CASE PRINT                     80907980
0B53 0 F28C          EOR    2 TERM-TB    *                                 80907990
0B54 1 4C18 0B59     BZ       RTN2B      BR IF OK                          80908000
0B56 0 4230          BSI    2 STMSG-TB   CPU ERROR                         80908010
0B57 0 9E1E          DC       /9E1E      MESSAGE ID                        80908020
0B58 0 421E          BSI    2 CNTLE-TB   TERMINATE ROUTINE                 80908030
                     *                                                     80908040
0B59 0 71FF  RTN2B   MDX    1 -1         DECR RTN LOOP CNT                 80908050
0B5A 0 70E5          B        RTN2L      LOOP                              80908060
0B5B 0 421E          BSI    2 CNTLE-TB   END OF ROUTINE                    80908070
                     *                                                     80908080
                     *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□    80908090
                     *                                                     80908100
                     *                TEST ROUTINE THREE                   80908110
                     *                                                     80908120
                     *     THIS ROUTINE WILL SEEK 2 IN AND 1 OUT FROM      80908130
                     *     CYLINDER ZERO TO CYLINDER 202 EXCEPT            80908140
                     *     CYLINDERS 90-110.  THE ROUTINE WILL THEN        80908150
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                        *     SEEK 2 OUT AND 1 IN FROM CYLINDER 202 TO          80908160
                        *     CYLINDER ZERO.  EACH SEEK IS VERFIED FOR          80908170
                        *     PROPER CYLINDER REACHED.                          80908180
                        *                                                       80908190
                        *-----------------------------------------------------  80908200
0B5C 0 63FF   RTN3  LDX   3 -1        DECR SEEKS BY ONE                         80908210
0B5D 0 6B1F         STX   3 INCR1     *                                         80908220
0B5E 0 6302         LDX   3 2         INCR SEEKS BY TWO                         80908230
0B5F 0 6B1E         STX   3 INCR2     *                                         80908240
0B60 0 C2E1         LD    2 K1-TB     FIRST CYL. WILL BE HOME                   80908250
0B61 0 4007         BSI     RTN3P     EXECUTE SUCCESSIVE SEEKS                  80908260
                    *                                                         80908270
0B62 0 63FE         LDX   3 -2        DECR SEEKS BY TWO                         80908280
0B63 0 6B19         STX   3 INCR1     *                                         80908290
0B64 0 6301         LDX   3 1         INCR SEEKS BY ONE                         80908300
0B65 0 6B18         STX   3 INCR2     *                                         80908310
0B66 0 C2E8         LD    2 K203-TB   INI. CYL. + 1                             80908320
0B67 0 4001         BSI     RTN3P     EXECUTE SUCCESSIVE SEEKS                  80908330
0B68 0 421E         BSI   2 CNTLE-TB  EXIT ROUTINE                              80908340
                    *                                                         80908350
0B69 0 0000   RTN3P DC      *-*       ENTRY POINT                               80908360
0B6A 0 D00C         STO     RTN3T     STOR FOR CALL                             80908370
0B6B 0 6500 00CA    LDX   L1 202      NO. IF SEEKS                              80908380
                    *                                                         80908390
0B6D 0 C009   RTN3Q LD      RTN3T     GET CYL. NO.                              80908400
0B6E 0 800E         A       INCR1     INCR OR DECR                              80908410
0B6F 0 D001         STO     RTN3R     STORE FOR SEEK                            80908420
0B70 0 4236         BSI   2 VERFY-TB  SEEK CYL. AND VERIFY                       80908430
0B71 0 0000   RTN3R DC      *-*       CYLINDER NO.                              80908440
0B72 1 0B73         DC      RTN3S     ADRS ERROR RETURN                         80908450
0B73 0 C0FD   RTN3S LD      RTN3R     GET LAST CYL. NO.                         80908460
0B74 0 8009         A       INCR2     INCR OR DECR                              80908470
0B75 0 D001         STO     RTN3T     STORE FOR SEEK                            80908480
0B76 0 4236         BSI   2 VERFY-TB  CALL VERFY ROUTINE                        80908490
0B77 0 0000   RTN3T DC      *-*       CYLINDER DESIRED                          80908500
0B78 1 0B79         DC      RTN3U     INVALID ADRS RETURN                       80908510
0B79 0 71FF   RTN3U MDX   1 -1        DECR COUNTER                              80908520
0B7A 0 70F2         B       RTN3Q     NOT FINISHED                              80908530
0B7B 1 4C80 0B69    B     I RTN3P     RETURN                                    80908540
                    *                                                         80908550
0B7D 0 0000   INCR1 DC      0                                                   80908560
0B7E 0 0000   INCR2 DC      0                                                   80908570
                    *-----------------------------------------------------  80908580
                    *-----------------------------------------------------  80908590
                    *=====================================================  80908600
                    *                                                         80908610
                    *                   TEST ROUTINE FOUR                     80908620
                    *                                                         80908630
                    *     THIS ROUTINE WILL ISSUE AND VERFY 100 RANDOM      80908640
                    *     SEEKS.  CYLINDERS 90-110 WILL NEVER BE            80908650
                    *     ATTEMPTED.                                        80908660
                    *                                                         80908670
                    *=====================================================  80908680
0B7F 0 7132   RTN4  MDX   1 100-LPCNT  100 LOOPS                               80908690
0B80 0 C29E         LD    2 RNDSK-TB    GET RNDM SEEK SWITCH                    80908700
0B81 0 4818         SKP     +-          USE AS FIRST IF NOT ZERO                80908710
0B82 0 C2F8         LD    2 PRNSK-TB    ELSE USE LAST GENERATED                 80908720
0B83 0 D2F7         STO   2 FRNSK-TB    FIRST RANDOM NUMBER                     80908730
0B84 0 7002         B       RTN4B       *                                       80908740
                    *                                                         80908750
0B85 0 C2F8   RTN4A LD    2 PRNSK-TB    GET LAST RNDM NUMBER                    80908760
0B86 0 4227         BSI   2 RNDOM-TB    GENERATE NEXT                           80908770
                    *                                                         80908780
0B87 0 D2F8   RTN4B STO   2 PRNSK-TB    SAVE                                    80908790
0B88 0 1808         SRA     8           *  FROM 0-202                           80908800
0B89 0 D001         STO     RTN4C       STORE FOR SEEK                          80908810
                    *                                                         80908820
0B8A 0 4236         BSI   2 VERFY-TB    SEEK AND VERIFY CYL.                    80908830
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0B8B 0 0000   RTN4C DC      *-*       CYL. DESIRED                              80908840
0B8C 1 0B85         DC      RTN4A     IF INVALID, DON'T COUNT                   80908850
0B8D 0 71FF         MDX   1 -1        ELSE COUNT                                80908860
0B8E 0 70F6         B       RTN4A     LOOP                                      80908870
0B8F 0 421E         BSI   2 CNTLE-TB  END OF RTN                                80908880
                    *                                                         80908890
                    *-----------------------------------------------------  80908900
                    *-----------------------------------------------------  80908910
                    *=====================================================  80908920
                    *                                                         80908930
                    *                   TEST ROUTINE 5-READ AND               80908940
                    *                   CK 320 WORDS OF HEX 1313              80908950
                    *                   FROM CYL 1-SECT 0                     80908960
                    *                                                         80908970
                    *=====================================================  80908980
0B90 0 6301   RTN5  LDX   3 1         IX EQUAL CYL                              80908990
0B91 0 6100         LDX   1 0         IX EQUAL WRITE SW                         80909000
0B92 0 C2BF   CMN2  LD    2 H1313-TB  GET DATA EXPECTED                         80909010
0B93 0 6200         LDX   2 0         IX EQUAL SECTOR                           80909020
0B94 0 69F6   CMN1  STX   1 RTN4C     SET RTN VALUES                            80909030
0B95 0 6A7E         STX   2 SECTD     *                                         80909040
0B96 0 6600 0141    LDX  L2 321       IX EQUAL WD CT                            80909050
0B98 0 6132         LDX   1 LPCNT     IX EQUAL LOOP CTR                         80909060
0B99 0 700F         B       CMRT2     BRANCH TO COMMON RTN                      80909070
                    *=====================================================  80909080
                    *                                                         80909090
                    *                   TEST ROUTINE 6-READ AND               80909100
                    *                   CHECK 320 WORDS OF HEX E5E5           80909110
                    *                   FROM CYL 201-SECT 6                   80909120
                    *                                                         80909130
                    *=====================================================  80909140
0B9A 0 6700 00C9    RTN6  LDX  L3 201     IX EQUAL CYL                        80909150
0B9C 0 6100         LDX   1 0         IX EQUAL WRT SW                           80909160
0B9D 0 C2CD   CMN3  LD    2 HE5E5-TB  GET DATA EXPECTED                         80909170
0B9E 0 6206         LDX   2 6         IX EQUAL SECTOR                           80909180
0B9F 0 70F4         MDX     CMN1      BRANCH TO COMPLETE SETUP                  80909190
                    *=====================================================  80909200
                    *                                                         80909210
                    *                   TEST ROUTINE THIRTEEN-                80909220
                    *                   WRITE AND READ 320 WORDS              80909230
                    *                   OF HEX 1313 ON CYL 2-SECT             80909240
                    *                   0-CHECK DATA READ                     80909250
                    *                                                         80909260
                    *=====================================================  80909270
0BA0 0 6302   RTN13 LDX   3 2         IX EQUAL CYL                              80909280
0BA1 0 70F0         B       CMN2      BRANCH TO COMPLETE SETUP                  80909290
                    *=====================================================  80909300
                    *                                                         80909310
                    *                   TEST ROUTINE FOURTEEN-                80909320
                    *                   WRITE AND READ 320 WORDS              80909330
                    *                   OF HEX E5E5 ON CYL 202-               80909340
                    *                   SECTOR 6-CHECK DATA READ              80909350
                    *                                                         80909360
                    *=====================================================  80909370
0BA2 0 6700 00CA    RTN14 LDX  L3 202     IX EQUAL CYL                        80909380
0BA4 0 70F8         B       CMN3      BRANCH TO COMPLETE SETUP                  80909390
                    *-----------------------------------------------------  80909400
                    *=====================================================  80909410
                    *                                                         80909420
                    *                   TEST ROUTINE SEVEN-READ               80909430
                    *                   ZERO WORDS                            80909440
                    *                                                         80909450
                    *=====================================================  80909460
0BA5 0 6301   RTN7  LDX   3 1         SET CYL TO USE                            80909470
0BA6 0 6200         LDX   2 0         SET WORD COUNT                            80909480
0BA7 0 6AE3         STX   2 RTN4C     CLEAR WRITE SW                            80909490
0BA8 0 6A6B         STX   2 SECTD     SET SECTOR                                80909500
                    *                                                         80909510
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                              *                                                  80909520
                              *                 THIS ROUTINE IS COMMON TO        80909530
                              *                 TEST ROUTINES 5, 6, 7, 13 AND 14 80909540
                              *                                                  80909550
                              *                                                  80909560
       0BA9 0 6B07            CMRT2 STX   3 CYL        SET CYLINDER TO USE       80909570
       0BAA 0 6A0F                  STX   2 WDCTA      SET WORD COUNT            80909580
       0BAB 0 6A13                  STX   2 CMRTC      SET IN READ CALL          80909590
       0BAC 0 D00E                  STO     DATA1      SET DATA EXPECTED         80909600
       0BAD 0 D012                  STO     DATA2      SET DATA EXPECTED         80909610
       0BAE 1 6600 087F             LDX  L2 TB         INDEX EQUAL TBL ADRS      80909620
       0BB0 0 4236                  BSI   2 VERFY-TB   SEEK DESIRED CYL AND      80909630
       0BB1 0 0000            CYL   DC      *-*        * VERIFY THE SEEK         80909640
       0BB2 1 0AE1                  DC      CNTL       EXIT ON ERROR             80909650
       0BB3 0 C28C            CMRTL LD    2 TERM-TB    SET DATA EXPECTED         80909660
       0BB4 0 D246                  STO   2 COMA+1-TB  SET FOR COMPARE RTN       80909670
       0BB5 0 C0D5                  LD      RTN4C      IS ROUTINE TO WRITE       80909680
       0BB6 1 4C18 0BBD             BZ      CMRTB      BRANCH TO READ ONLY       80909690
       0BB8 0 C05B                  LD      SECTD      GET SECTOR DESIRED        80909700
       0BB9 0 4239                  BSI   2 WRITE-TB   GO WRITE DATA             80909710
       0BBA 0 0000            WDCTA DC      *-*        WORD COUNT                80909720
       0BBB 0 0000            DATA1 DC      *-*        DATA EXPECTED             80909730
       0BBC 1 0BBD                  DC      CMRTB      EXIT ON ERROR             80909740
       0BBD 0 C056            CMRTB LD      SECTD      GET SECTOR TO READ        80909750
       0BBE 0 4224                  BSI   2 READ-TB    GO READ DATA              80909760
       0BBF 0 0000            CMRTC DC      *-*        WORD COUNT                80909770
       0BC0 0 0000            DATA2 DC      *-*        DATA EXPECTED             80909780
       0BC1 1 0BC8                  DC      CMRTF      CMP ERROR-CONTINUE        80909790
       0BC2 0 C20C                  LD    2 RTNER-TB   GET ERROR COUNT           80909800
                              *                                                  80909810
       0BC3 0 4218                  BSI   2 CKLK-TB    CK LOCK-ON ERROR          80909820
       0BC4 1 0BB3                  DC      CMRTL      LOOP IF SET               80909830
       0BC5 0 71FF                  MDX   1 -1         DECR LOOP RTN CNT         80909840
       0BC6 0 70EC                  MDX     CMRTL      LOOP ROUTINE              80909850
       QBC7 0 421E                  BSI   2 CNTLE-TB   EXIT ROUTINE              80909860
                              *                                                  80909870
       0BC8 0 D20C            CMRTF STO   2 RTNER-TB   SET ERROR SWITCH          80909880
       0BC9 0 4218                  BSI   2 CKLK-TB    CHECK LOCK-ON-ERROR       80909890
       0BCA 1 0BB3                  DC      CMRTL      IF ON                     80909900
       0BCB 0 421E                  BSI   2 CNTLE-TB   TERMINATE ROUTINE         80909910
                              *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□  80909920
                              *                                                  80909930
                              *                 TEST ROUTINE EIGHT-              80909940
                              *                 READ CYL 1-SECT 0 USING          80909950
                              *                 READ CK-CK FOR ANY DSW           80909960
                              *                 ERRORS AND CK THAT NO            80909970
                              *                 DATA IS TRANSFERRED TO           80909980
                              *                 MEMORY.                          80909990
                              *                                                  80910000
                              *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□  80910010
       0BCC 0 4236            RTN8  BSI   2 VERFY-TB   SEEK CYL 1 - VERIFY       80910020
       0BCD 0 0001                  DC      1          * THE SEEK                80910030
       0BCE 1 0AE1                  DC      CNTL       EXIT IF ERROR             80910040
       0BCF 0 10A0                  SLT     32         CLEAR AQ                  80910050
       0BD0 0 DADB                  STD   2 ERSK1-TB   CLEAR ERROR COUNTERS      80910060
                              *                                                  80910070
       0BD1 0 C2DA            RTN8L LD    2 NCYL#-TB   GET CYL. SOUGHT           80910080
       0BD2 0 1003                  SLA     3          CREATE PROPER SECTOR ID   80910090
       0BD3 0 D246                  STO   2 COMA+1-TB  SET IN I/O AREA           80910100
       0BD4 0 C2C4                  LD    2 RDCHK-TB   SET READ CK MODIFIER      80910110
       0BD5 0 4224                  BSI   2 READ-TB    READ ROUTINE              80910120
       0BD6 0 0141                  DC      321        321 WORDS                 80910130
       0BD7 0 FFFF                  DC      /FFFF      DATA EXPECTED             80910140
       0BD8 1 0BEF                  DC      RTN8J      CMP ERROR RETURN          80910150
       0BD9 0 C2C7                  LD    2 ZSNS-TB    GET INTRPT DSW            80910160
       0BDA 1 4C10 0BE3             BNN     RTN8A      BRANCH ON ERROR           80910170
       0BDC 1 7401 085A             MDX  L  ERSK1,1    INCR ERROR CNT            80910180
       0BDE 0 421B            RTN8M BSI   2 CKPRT-TB   CK PRINT-ALL OPTION       80910190
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       0BDF 0 7001                  B       RTN8N      OPTION NOT SET            80910200
       0BE0 0 7002                  B       RTN8A      OPTION SET                80910210
       0BE1 0 C2E1            RTN8N LD    2 K1-TB      SET PRINT SW NON-ZERO     80910220
       0BE2 0 D2EB                  STO   2 PRSW-TB                              80910230
                              *                                                  80910240
       0BE3 0 71FF            RTN8A MDX   1 -1         DECR RTN LOOP COUNT       80910250
       0BE4 0 70EC                  MDX     RTN8L      LOOP                      80910260
       0BE5 0 1010                  SLA     16         CLEAR A REG.              80910270
       0BE6 0 D2EB                  STO   2 PRSW-TB    CLEAR PRINT SWITCH        80910280
       0BE7 0 CADB                  LDD   2 ERSK1-TB   GET ERROR CNTS            80910290
       0BE8 0 DAD3                  STD   2 MOD3-TB    STORE IN CASE PRINT       80910300
       0BE9 0 82DC                  A     2 CNTB-TB    ADD ERROR CNTB            80910310
       0BEA 1 4C18 0AE1             BZ      CNTL       EXIT ROUTINE IF ZERO      80910320
       0BEC 0 4230                  BSI   2 STMSG-TB   PRINT MESSAGE             80910330
       0BED 0 3E1A                  DC      /3E1A      MID/FORM NUMBER           80910340
       0BEE 0 421E                  BSI   2 CNTLE-TB   EXIT ROUTINE              80910350
                              *                                                  80910360
                              *                                                  80910370
       0BEF 1 7401 085B       RTN8J MDX  L  CNTB,1     INCR ERROR COUNT          80910380
       0BF1 0 70EC                  MDX     RTN8M      LOOP                      80910390
                              *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□  80910400
                              *                                                  80910410
                              *                 ROUTINE NINE-WRITE 320           80910420
                              *                 RANDOM WORDS-READ AND CK-        80910430
                              *                 ON CYL 2-SECT 0.                 80910440
                              *                                                  80910450
                              *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□  80910460
       0BF2 0 4236            RTN9  BSI   2 VERFY-TB   SEEK CYL 2-VERIFY         80910470
       0BF3 0 0002                  DC      2          * THE SEEK                80910480
       0BF4 1 0AE1                  DC      CNTL       TERMINATE ON ERROR        80910490
       0BF5 0 6300                  LDX   3 0          IX EQUAL SECTOR 0         80910500
       0BF6 0 C2FA                  LD    2 LRN1-TB    GET BEGIN PATCH OPTION    80910510
       0BF7 0 7005                  MDX     RT910      BRANCH TO COMMON          80910520
                              *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□  80910530
                              *                                                  80910540
                              *                 ROUTINE TEN-WRITE 320            80910550
                              *                 RANDOM WORDS-READ AND CK-        80910560
                              *                 CYL 202-SECT 6.                  80910570
                              *                                                  80910580
                              *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□  80910590
       0BF8 0 4236            RTN10 BSI   2 VERFY-TB   SEEK CYL 202-VERIFY       80910600
       0BF9 0 00CA                  DC      202        * THE SEEK                80910610
       0BFA 1 0AE1                  DC      CNTL       TERMINATE ON ERROR        80910620
       0BFB 0 C2FC                  LD    2 LRN2-TB    GET BEGIN PATCH OPTION    80910630
       0BFC 0 6306                  LDX   3 6          IX EQUAL SECTOR 6         80910640
                              *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□  80910650
                              *                                                  80910660
                              *                 THIS PORTION COMMON TO           80910670
                              *                 ROUTINES NINE AND TEN.           80910680
                              *                                                  80910690
                              *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□  80910700
       0BFD 0 6B16            RT910 STX   3 SECTD      SAVE SECTOR NUMBER        80910710
       0BFE 0 4820                  SKP     Z          SKIP IF ZERO              80910720
       0BFF 0 D02F                  STO     LSTNO      SAVE BEGIN PATCH OPTION   80910730
       0C00 0 C29F                  LD    2 RNDWR-TB   GET START OPTION          80910740
       0C01 0 4818                  SKP     &-         SKIP IF NON ZERO          80910750
       0C02 0 C02C                  LD      LSTNO      CONTINUE PATTERN          80910760
       0C03 0 D02C                  STO     FSTNO      SET RTN FIRST NUMBER      80910770
       0C04 0 C29F            RTN9L LD    2 RNDWR-TB   GET START OPTION          80910780
       0C05 0 4820                  SKP     Z          SKIP IF ZERO              80910790
       0C06 0 D028                  STO     LSTNO      SET AS LAST NUMBER        80910800
                              *                                                  80910810
       0C07 0 6700 FEC0             LDX  L3 -320       NUMBER OF WORDS           80910820
       0C09 0 C025                  LD      LSTNO      GET LAST NUMBER           80910830
       0C0A 0 D00E                  STO     RTN9C      SET IN READ CALL          80910840
                              *                                                  80910850
       0C0B 1 D700 0A06       RTN9A STO  L3 COMA&322   SET PATTERN               80910860
       0C0D 0 4227                  BSI   2 RNDOM-TB   GENERATE NEW NUMBER       80910870
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0C0E 0 7301              MDX   3 1          DECR WORD COUNT          80910880
0C0F 0 70FB              MDX     RTN9A      LOOP                     80910890
0C10 0 D01E              STO     LSTNO      SET NEW LAST NUMBER      80910900
                   *                                                 80910910
0C11 0 C002              LD      SECTD      GET SECTOR NUMBER        80910920
0C12 0 4239              BSI   2 WRITE-TB   WRITE DATA               80910930
0C13 0 4141              DC      /4141      NO. OF WORDS/DON'T PRESET 80910940
                   *                        *  THE I/O AREA          80910950
0C14 0 0000        SECTD DC      *-*        SECTOR TO USE-0 OR 6     80910960
0C15 1 0C16              DC      RTN9B      ERROR RETURN             80910970
                   *                                                 80910980
0C16 0 C0FD        RTN9B LD      SECTD      GET SECTOR NUMBER        80910990
0C17 0 4224              BSI   2 READ-TB    READ DATA-COMPARE        80911000
0C18 0 8141              DC      321+/8000  WORD COUNT/RANDOM NUMBERS 80911010
0C19 0 0000        RTN9C DC      *-*        BEGINNING DATA WORD      80911020
0C1A 1 0C2B              DC      RTN9E      USE SAME PATTERN         80911030
                   *                                                 80911040
0C1B 0 C20C              LD    2 RTNER-TB   GET ERROR SW             80911050
0C1C 0 4218              BSI   2 CKLK-TB    CK LOCK ON ERROR         80911060
0C1D 1 0C04              DC      RTN9L      RETURN IF ON             80911070
0C1E 0 71FF              MDX   1 -1         DECR LOOP COUNT          80911080
0C1F 0 70E4              MDX     RTN9L      LOOP-NEW PATTERN         80911090
0C20 0 C00F              LD      FSTNO      SET SUMMARY TABLE        80911100
0C21 1 6780 0800         LDX  I3 RID        IX EQUAL RTN NUMBER      80911110
0C23 0 73F7              MDX   3 -9         SKP IF RTN 9             80911120
0C24 0 7301              MDX   3 1          INDEX = 2                80911130
0C25 1 D700 0878         STO  L3 FRN1       SAVE FIRST NUMBER USED   80911140
0C27 0 C007              LD      LSTNO      GET LAST NUMBER USED     80911150
0C28 1 D700 0879         STO  L3 LRN1       SAVE                     80911160
0C2A 0 421E              BSI   2 CNTLE-TB   EXIT ROUTINE             80911170
                   *                                                 80911180
                   *            READ OR COMPARE ERROR                80911190
                   *                                                 80911200
0C2B 0 D20C        RTN9E STO   2 RTNER-TB   SET ERROR SW             80911210
0C2C 0 4218              BSI   2 CKLK-TB    CK LOCK ON ERROR         80911220
0C2D 1 0C04              DC      RTN9L      RETURN IF ON             80911230
0C2E 0 421E              BSI   2 CNTLE-TB   EXIT ROUTINE             80911240
0C2F 0 0000        LSTNO DC      *-*        LAST RANDOM NUMBER       80911250
0C30 0 0000        FSTNO DC      *-*        FIRST NUMBER USED        80911260
                   *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80911270
                   *                                                 80911280
                   *                TEST ROUTINE ELEVEN-             80911290
                   *                 1. WRITE SECTOR ID PLUS         80911300
                   *                    320 WORDS OF /1313 ON        80911310
                   *                    CYL 2-SECT 0.                80911320
                   *                 2. REWRITE CYL 2-SECT 0         80911330
                   *                    WITH 1 WORD OF SECTOR        80911340
                   *                    ID ONLY.                     80911350
                   *                 3. READ 321 WORDS FROM          80911360
                   *                    CYL 2-SECT 0.                80911370
                   *                 4. CK DATA READ FOR             80911380
                   *                    CORRECT SECT ID AND          80911390
                   *                    DATA OF ALL ZEROS.           80911400
                   *                 5. RESTORE ORIGINAL DATA        80911410
                   *                    ON CYL 2-SECT 0.             80911420
                   *                                                 80911430
                   *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80911440
0C31 0 4236        RTN11 BSI   2 VERFY-TB   SEEK CYL 2-VERIFY        80911450
0C32 0 0002              DC      2          * THE SEEK               80911460
0C33 1 0AE1              DC      CNTL       EXIT ON ERROR            80911470
0C34 0 700A              B       RT11B      WRITE 321 WORDS FIRST    80911480
                   *                                                 80911490
0C35 0 1010        RT11L SLA     16         WRITE CYL 2-SECT 0       80911500
0C36 0 4239              BSI   2 WRITE-TB   * WITH SECTOR ID         80911510
0C37 0 4001              DC      /4001      *  ONLY                  80911520
0C38 0 0000        AVG   DC      0          AVERAGE OF 50 PASSES     80911530
0C39 1 0C3A              DC      RT11A      EXIT IF ERROR            80911540
                   *                                                 80911550
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0C3A 0 1010        RT11A SLA     16         READ CYL 2-SECT 0        80911560
0C3B 0 4224              BSI   2 READ-TB    *                        80911570
0C3C 0 0141              DC      321        *                        80911580
0C3D 0 0000              DC      0          DATA EXPECTED            80911590
0C3E 1 0C4A              DC      RT11C      EXIT IF ERROR            80911600
                   *                                                 80911610
0C3F 0 1010        RT11B SLA     16         WRITE CYL 2-SECT 0       80911620
0C40 0 4239              BSI   2 WRITE-TB   * WITH /1313             80911630
0C41 0 0141              DC      321        321 WORDS                80911640
0C42 0 1313              DC      /1313      DATA                     80911650
0C43 1 0C4A              DC      RT11C      EXIT IF ERROR            80911660
0C44 0 C20C              LD    2 RTNER-TB   GET ROUTINE ERROR SW     80911670
0C45 0 4218              BSI   2 CKLK-TB    CHECK LOCK-ON-ERROR      80911680
0C46 1 0C35              DC      RT11L      LOOP                     80911690
                   *                                                 80911700
0C47 0 71FF              MDX   1 -1         DECR LOOP COUNT          80911710
0C48 0 70EC              MDX     RT11L      LOOP ROUTINE             80911720
0C49 0 421E              BSI   2 CNTLE-TB   EXIT ROUTINE             80911730
                   *                                                 80911740
0C4A 0 D20C        RT11C STO   2 RTNER-TB   SET ERROR SW             80911750
0C4B 0 4218              BSI   2 CKLK-TB    CHECK LOCK ON ERROR      80911760
0C4C 1 0C35              DC      RT11L      RETURN IF ON             80911770
0C4D 0 421E              BSI   2 CNTLE-TB   TERMINATE DFT            80911780
                   *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80911790
                   *                                                 80911800
                   *            TEST ROUTINE 12-WRITE 400            80911810
                   *            WORDS ON CYL 2-SECT 0.               80911820
                   *            READ AND CK NUMBER OF                80911830
                   *            WORDS WRITTEN-SAVE IN                80911840
                   *            SUMMARY.                             80911850
                   *            RESTORE SECTOR 1 IF                  80911860
                   *            DESTROYED.                           80911870
                   *            NOTE-SUMMARY VALUE IS THE            80911880
                   *            AVERAGE OF 50 PASSES.                80911890
                   *                                                 80911900
                   *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80911910
0C4E 0 4236        RTN12 BSI   2 VERFY-TB   SEEK CYL 2 AND VERIFY    80911920
0C4F 0 0002              DC      2          * THE SEEK               80911930
0C50 1 0AE1              DC      CNTL       EXIT IF ERROR            80911940
0C51 0 1010        RT12Z SLA     16         CLEAR AVERAGE            80911950
0C52 0 D0E5              STO     AVG        *                        80911960
                   *                                                 80911970
0C53 0 C00E        RT12L LD      K370       SET WORD COUNT           80911980
0C54 0 1002              SLA     2          CLEAR BIT1                  11981
0C55 0 1802              SRA     2          *
0C56 0 D245              STO   2 COMA-TB    IN I/O AREA              80911990
0C57 0 C2BF              LD    2 H1313-TB   GET DATA                 80912000
0C58 0 422A              BSI   2 SETV-TB    PRESET I/O AREA          80912010
                   *                                                 80912020
0C59 0 1010              SLA     16         WRITE CYL 2-SECT 0       80912030
0C5A 0 4239              BSI   2 WRITE-TB   * WITH NO DSW CHECK         12040
0C5B 0 C190              DC      400+/8000+/4000  DON'T PRESET I/O      12050
                   *                        *     AREA OR CK DSW
0C5C 0 001B        K27   DC      27         CONSTANT 27              80912060
0C5D 0 403D              BSI     R12CK      CK DSW                   80912070
                   *                                                 80912080
0C5E 0 4230              BSI   2 STMSG-TB   PRINT IF ERROR           80912090
0C5F 0 5E15              DC      /5E15      MESSAGE ID               80912100
                   *                                                 80912110
0C60 0 1010              SLA     16         READ SECTOR 0            80912120
0C61 0 4224              BSI   2 READ-TB    READ W/O CKING DSW/DATA     12130
0C62 0 4172        K370  DC      370+/4000  WORD COUNT                  12140
0C63 0 4037              BSI     R12CK      CHECK DSW                80912150
0C64 0 4230              BSI   2 STMSG-TB   PRINT IF ERROR           80912160
0C65 0 5E16              DC      /5E16      MESSAGE ID               80912170
                   *                                                 80912180
0C66 0 6700 0172         LDX  L3 370        CK NUMBER OF WORDS       80912190
0C68 1 C700 08C4   RT12A LD   L3 COMA       *                        80912200
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0C6A 0 F2BF            EOR   2 H1313-TB  *                                  80912210
0C6B 1 4C18 0C6F       BZ      RT12B      BRANCH IF FOUND                    80912220
0C6D 0 73FF            MDX   3 -1         DECR WD COUNT                      80912230
0C6E 0 70F9            MDX     RT12A      LOOP                               80912240
                       *                                                     80912250
0C6F 0 6BC0     RT12B  STX   3 FSTNO      SAVE NUMBER OF WORDS               80912260
0C70 1 7780 0C38       MDX   I3 AVG        ADD TO TOTAL                       80912270
0C72 0 6BC5            STX   3 AVG        SAVE TOTAL                         80912280
                       *                                                     80912290
0C73 0 C2E1            LD    2 K1-TB      READ SECTOR 1                      80912300
0C74 0 4224            BSI   2 READ-TB    READ W/O CHECKING                     12310
0C75 0 4001            DC      1+/4000    WORD COUNT                            12320
0C76 0 C246            LD    2 COMA&1-TB  GET ID READ                        80912330
0C77 0 F298            EOR   2 CY002-TB   CK FOR CORRECT                     80912340
0C78 0 F2E1            EOR   2 K1-TB      *                                  80912350
0C79 1 4C18 0C85       BZ      RT12D      BRANCH IF CORRECT                  80912360
0C7B 0 C20C            LD    2 RTNER-TB   GET ERROR SW                       80912370
0C7C 0 D2C7            STO   2 ZSNS-TB    DUMMY ENTRY                        80912380
0C7D 0 401D            BSI     R12CK      CK PRINT SW ONLY                   80912390
                       *                                                     80912400
0C7E 0 4230            BSI   2 STMSG-TB   PRINT ERROR                        80912410
0C7F 0 5E18            DC      /5E18      MESSAGE ID                         80912420
0C80 0 C2E1            LD    2 K1-TB      RESTORE SECTOR 1                   80912430
0C81 0 4239            BSI   2 WRITE-TB   *                                  80912440
0C82 0 0141            DC      321        *                                  80912450
0C83 0 E5E5            DC      /E5E5      *                                  80912460
0C84 1 0C85            DC      RT12D      ERROR RETURN                       80912470
0C85 0 C0AA     RT12D  LD      FSTNO      GET CURRENT WD CT                  80912480
0C86 0 D2C7            STO   2 ZSNS-TB    DUMMY ENTRY                        80912490
0C87 0 92E9            S     2 K331-TB    SUB 331                            80912500
0C88 1 4C28 0C8D       BN      RT12G      BRANCH IF LESS                     80912510
0C8A 0 90D1            S       K27        SUB 27                             80912520
0C8B 1 4C08 0C91       BNP     RT12F      BRANCH IF LESS THAN 358            80912530
0C8D 0 C20C     RT12G  LD    2 RTNER-TB   GET ERROR SW                       80912540
0C8F 0 4230            BSI   2 STMSG-TB   PRINT ERROR                        80912550
0C90 0 4E17            DC      /4E17      MESSAGE ID                         80912560
0C91 0 C20C     RT12F  LD    2 RTNER-TB   GET ERROR SW                       80912570
0C92 0 4218            BSI   2 CKLK-TB    CHECK LOCK ON ERROR                80912580
0C93 1 0C51            DC      RT12Z      RETURN IF ON                       80912590
0C94 0 71FF            MDX   1 -1         DECR RTN LOOP COUNT                80912600
0C95 0 70BD            MDX     RT12L      LOOP                               80912610
0C96 0 C0A1            LD      AVG        GET TOTAL WORDS                    80912620
0C97 0 1890            SRT     16         SET IN Q                           80912630
0C98 0 A812            D       NLOOP      DIVIDE BY 50                       80912640
0C99 0 D2F6            STO   2 WRLNG-TB   SET IN SUMMARY                     80912650
0C9A 0 421E            BSI   2 CNTLE-TB   EXIT ROUTINE                      80912660
                       *                                                     80912670
                                                                             80912680
0C9B 0 0000     R12CK  DC      *-*        ENTRY                              80912690
0C9C 0 C2C7            LD    2 ZSNS-TB    GET INTERRUPT DSW                  80912700
0C9D 0 4828            SKP     &Z         SKIP IF BIT 0 IS 0                 80912710
0C9E 0 1007            SLA     7          CHECK BIT 7                        80912720
0C9F 1 4C28 0CA8       BN      RCKX       BRANCH IF ON                       80912730
0CA1 0 C20C            LD    2 RTNER-TB   GET ERROR SW                       80912740
0CA2 0 421B            BSI   2 CKPRT-TB   CHECK PRINT ALL SW                 80912750
0CA3 0 7004            MDX     RCKX       RETURN IF OFF                      80912760
0CA4 0 C0B7            LD      K27        SET ERROR SW                       80912770
0CA5 0 D20C            STO   2 RTNER-TB   *                                  80912780
0CA6 1 4C80 0C9B RCKX1 BSC   I R12CK      EXIT ROUTINE                       80912790
0CA8 1 7402 0C9B RCKX  MDX   L R12CK,2    INCR RETURN TO NO PRINT            80912800
0CAA 0 70FB            MDX     RCKX1      GO EXIT                            80912810
0CAB 0 0032     NLOOP  DC      LPCNT      LOOP COUNT                         80912820
*--------------------------------------------------------------------------- 80912830
*                                                                            80912840
*           SUB-ROUTINE ZRQDV                                                80912850
*                                                                            80912860
*--------------------------------------------------------------------------- 80912870
**** ROUTINE CALL                                                            80912880
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*     BSI   2 ZRQDV-TB                                                       80912890
*                                                                            80912900
*                                                                            80912910
*                    ROUTINE TO REQUEST DEVICE                               80912920
*---------------------------------------------------------------------------- 80912930
0CAC 0 C2BC     RQDV  LD    2 DDEFX-TB   GET SELECTED DDEF                   80912940
0CAD 1 4CA8 08C1      BN    I ZRQDV      EXIT IF DEVICE CONNECTED             80912950
*                                                                            80912960
*           REQUEST DEVICE                                                   80912970
*                                                                            80912980
0CAF 2 4480 0131 ZRQDA BSI  I REQDV      MONITOR CALL                        80912990
0CB1 1 0CB7           DC      ZBUSY      BUSY RETURN                         80913000
0CB2 1 083B           DC      DDEFX      DDEF+SW FNC 2                       80913010
0CB3 1 0826           DC      DVA        ADDRS DVA                           80913020
0CB4 1 080B           DC      TERM       ADDRS TERMINATOR                    80913030
0CB5 1 4C80 08C1      B     I ZRQDV      EXIT                                80913040
*                                                                            80913050
*           DEVICE BUSY                                                      80913060
*                                                                            80913070
0CB7 0 422D     ZBUSY BSI   2 STMLS-TB   SET RETURN FROM MONITOR             80913080
0CB8 0 70F6           B       ZRQDA      *  AND EXIT TO MONITOR              80913090
*---------------------------------------------------------------------------- 80913100
*---------------------------------------------------------------------------- 80913110
*============================================================================ 80913120
*                                                                            80913130
*              SUB-ROUTINE XEQ                                               80913140
*                                                                            80913150
*============================================================================ 80913160
*                                                                            80913170
*                                                                            80913180
*           THIS ROUTINE WILL BUILD AND ISSUE                                80913190
*           AN XIO INSTRUCTION.                                              80913200
*                                                                            80913210
*           IT WILL THEN WAIT FOR AN INTERRUPT,                              80913220
*           LOOPING THROUGH THE MONITOR.  THE                                80913230
*           LOCATION (XCNT) WILL KEEP                                        80913240
*           THE CURRENT DELAY COUNT FOR A LOST                               80913250
*           INTERRUPT.                                                       80913260
*                                                                            80913270
*           IF AN INTERRUPT IS LOST AN ERROR                                 80913280
*           MESSAGE IS PRINTED AND THE ROUTINE                               80913290
*              TERMINATES THE DFT                                            80913300
*                                                                            80913310
**** ROUTINE CALL                                                            80913320
*     BSI   2 XEQ-TB                                                         80913330
*     IOCC MUST BE PRESET AT LOCATION (ZXIO).                                80913340
*                                                                            80913350
*---------------------------------------------------------------------------- 80913360
0CB9 0 C2CA     XEQE  LD    2 ZXIO+1-TB  GET IOCC                            80913370
0CBA 0 EAA7           OR    2 DVA-TB     COMBINE WITH AREA CODE              80913380
0CBB 0 D2CA           STO   2 ZXIO&1-TB  SAVE                                80913390
0CBC 0 D2A6           STO   2 INTSW-TB   SET INTRPT SWITCH                   80913400
0CBD 0 4242           BSI   2 ZRQDV-TB   REQUEST DEVICE                      80913410
0CBE 0 CAC9           LDD   2 ZXIO-TB    SET IOCC USED FOR MSG               80913420
0CBF 0 DAD3           STD   2 MOD3-TB    *                                   80913430
*                                                                            80913440
0CC0 0 0ACB     CKRD1 XIO   2 SNXIO-TB   SENSE DSW                           80913450
0CC1 0 D2D1           STO   2 TBDSW-TB   SAVE                                80913460
0CC2 0 E2BE           AND   2 H3000-TB   SAVE BITS 2-3..RDY/BUSY             80913470
0CC3 1 4C18 0CCE      BZ      XEQB       BRANCH IF OK                        80913480
*                                                                            80913490
*     DISK IS BUSY AND/OR NOT READY                                          80913500
*                                                                            80913510
0CC5 0 4230           BSI   2 STMSG-TB   CALL MSG SETUP RTN                  80913520
0CC6 0 5E03           DC      /5E03      MESSAGE ID                          80913530
*                                                                            80913540
*     LOOP THRU MONITOR                                                      80913550
*                                                                            80913560
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0CC7 0 C2EA          LD    2 K10TH-TB   SET LOOP COUNT TO 10,000   80913570
0CC8 0 D208          STO   2 ZCNT-TB    *                          80913580
0CC9 0 422D    CKRD3 BSI   2 STMLS-TB   SET RETURN AND EXIT       80913590
                     *                                            80913600
                     *     MONITOR RETURNS HERE                   80913610
                     *                                            80913620
0CCA 1 74FF 0887     MDX L ZCNT,-1      DECR COUNT                 80913630
0CCC 0 70FC          MDX   CKRD3        LOOP                       80913640
0CCD 0 70F2          MDX   CKRD1        TEST AGAIN                 80913650
                     *                                            80913660
                     *                                            80913670
0CCE 0 C2C5    XEQB  LD    2 SNRES-TB   SET LOST INTRPT            80913680
0CCF 0 D208          STO   2 ZCNT-TB    *  COUNTER                 80913690
0CD0 0 0AC9          XIO   2 ZXIO-TB    ISSUE COMMAND              80913700
                     *                                            80913710
0CD1 0 0ACB          XIO   2 SNXIO-TB   GET PRESENT DSW            80913720
0CD2 0 D2D1          STO   2 TBDSW-TB   STORE IN CASE PRINT        80913730
0CD3 0 C245          LD    2 COMA-TB    IF ZERO DON'T CHECK FOR    80913740
0CD4 1 4C18 0CDD     BZ      XEQLP      *  BUSY AND NOT READY      80913750
0CD6 0 C2D1          LD    2 TBDSW-TB   GET DSW JUST SENSED        80913760
0CD7 0 E2BE          AND   2 H3000-TB   SAVE BITS 2-3              80913770
0CD8 0 F2BE          EOR   2 H3000-TB   COMPLEMENT THEM FOR TEST   80913780
0CD9 1 4C18 0CDD     BZ      XEQLP      BRANCH IF OK               80913790
                     *                                            80913800
0CDB 0 4230          BSI   2 STMSG-TB   NOT READY ERROR MSG       80913810
0CDC 0 0E04          DC      /0E04      MESSAGE ID                 80913820
                     *                                            80913830
                     *          EXIT TO MONITOR                   80913840
                     *                                            80913850
0CDD 0 422D    XEQLP BSI   2 STMLS-TB   SET MLSCF ENTRY AND EXIT  80913860
                     *                                            80913870
                     *          MONITOR RETURNS HERE              80913880
                     *                                            80913890
0CDE 0 C2A6          LD    2 INTSW-TB   GET INTRPT SWITCH          80913900
0CDF 1 4C18 0CE8     BZ      XEQX       BRANCH IF OFF              80913910
0CE1 1 74FF 0887     MDX L ZCNT,-1      DECR LOOP COUNT            80913920
0CE3 0 70F9          B       XEQLP      BRANCH IF NOT ZERO         80913930
                     *                                            80913940
0CE4 0 4230          BSI   2 STMSG-TB   PRINT LOST INTRPT          80913950
0CE5 0 0E01          DC      /0E01      MESSAGE ID                 80913960
0CE6 0 423F          BSI   2 ZRLDV-TB   LOST INTRPT-REL DEV.       80913970
0CE7 0 4233          BSI   2 TEXIT-TB   TERMINATE DFT              80913980
                     *                                            80913990
0CE8 0 423F    XEQX  BSI   2 ZRLDV-TB   RELEASE DEVICE            80914000
0CE9 0 422D          BSI   2 STMLS-TB   LOOP THRU MONITOR         80914001
0CEA 0 C2C7          LD    2 ZSNS-TB    GET INTRPT DSW             80914010
0CEB 0 D2D1          STO   2 TBDSW-TB   STORE FOR PRINT           80914020
0CEC 1 4C80 08BB     B   I XEQ          EXIT                       80914030
                     *---------------------------------------------- 80914040
                     *---------------------------------------------- 80914050
                     *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80914060
                     *                                            80914070
                     *          SUB-ROUTINE ZRLDV                 80914080
                     *                                            80914090
                     **** ROUTINE CALL                            80914100
                     *     BSI   2 ZRLDV-TB                       80914110
                     *                                            80914120
                     *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80914130
0CEE 0 C2BC    RLDVE LD    2 DDEFX-TB   GET DDEF SELECTED          80914140
0CEF 1 4C90 08BE     BNN   I ZRLDV      EXIT IF DEVICE RELEASED    80914150
                     *                                            80914160
                     *          RELEASE DEVICE                    80914170
                     *                                            80914180
0CF1 2 4480 0132     BSI   I RELDV      RELEASE DEVICE             80914190
0CF3 1 083B          DC      DDEFX      DDEF+SW FNC 2              80914200
0CF4 1 080B          DC      TERM       ADDRS OF TERMINATOR        80914210
0CF5 1 4C80 08BE     B     I ZRLDV      EXIT                       80914220
                     *---------------------------------------------- 80914230
```



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                     *---------------------------------------------- 80914240
                     *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80914250
                     *                                            80914260
                     *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80914270
                     *                                            80914280
                     *          ROUTINE TO SAVE INDEX REGS        80914290
                     *          AND EXIT TO MONITOR               80914300
                     *                                            80914310
                     **** ROUTINE CALL                            80914320
                     *     BSI   2 STMLS-TB                       80914330
                     *                                            80914340
                     *---------------------------------------------- 80914350
                     *                                            80914360
0CF7 0 6907    STMLE STX   1 STMLR&3    SAVE IX 1                  80914370
0CF8 0 C009          LD      STML       GET RETURN ADRS            80914380
0CF9 0 D28B          STO   2 MLSCF&1-TB SET IN MLSCF TABLE         80914390
0CFA 2 4C80 012D     BSC   I START      EXIT TO MONITOR THRU START 80914400
                     *                                            80914410
                     *          MONITOR RETURNS HERE              80914420
                     *                                            80914430
0CFC 1 6600 087F    STMLR LDX  L2 TB          RESTORE INDEX REGS   80914440
0CFE 0 6500 0000          LDX  L1 *-*         *                    80914450
0D00 1 4C80 08AC          B    I  STMLS       EXIT VIA ENTRANCE    80914460
0D02 1 0CFC         STML  DC      STMLR       ADRS OF RETURN       80914470
                     *                                            80914480
                     *---------------------------------------------- 80914490
                     *---------------------------------------------- 80914500
                     *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80914510
                     *                                            80914520
                     *          SUB-ROUTINE VERFY                 80914530
                     *                                            80914540
                     *□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ 80914550
                     *     THIS ROUTINE CALLS THE SEEK SUB-ROUTINE 80914560
                     *     TO LOCATE DESIRED CYLINDER. THE CORRECT 80914570
                     *     CYLINDER IS VERIFIED BY READING AS MANY 80914580
                     *     AS ALL EIGHT SECTOR ID'S IF COMPARE ERRORS 80914590
                     *     OCCUR.                                 80914600
                     *                                            80914610
                     *     IF TWO (2) CORRECT CYLINDER ID'S ARE READ, 80914620
                     *     THE 'PRESENT CYLINDER' WORD (PCYL#) IS 80914630
                     *     UPDATED AND THE ROUTINE IS EXITED.     80914640
                     *                                            80914650
                     *     IF EIGHT DSW READ ERRORS OR SECTOR     80914660
                     *     ID ERRORS OCCUR, THE DFT IS TERMINATED. 80914670
                     *                                            80914680
                     *     IF NEITHER OF THE ABOVE OCCUR, A TEST IS 80914690
                     *     MADE FOR ANY FIVE (5) CYLINDER ID'S JUST READ 80914700
                     *     READ BEING THE SAME. IF SO, THIS CYLINDER 80914710
                     *     IS ASSUMED TO BE THE PRESENT CYLINDER AND 80914720
                     *     UP TO SEVEN RETRIES ARE MADE FOR THE COR- 80914730
                     *     RECT CYLINDER.                         80914740
                     *                                            80914750
                     **** ROUTINE CALL                            80914760
                     *                                            80914770
                     *     BSI   2 VERFY-TB                       80914780
                     *     DC      CYL # DESIRED                  80914790
                     *     DC      ADDRS OF ADDRESS ERROR RETURN  80914800
                     *---------------------------------------------- 80914810
                     *                                            80914820
0D03 0 C2E6    VRFYE LD    2 K8-TB       EIGHT TRIES FOR GOOD EXIT 80914830
0D04 0 D209          STO   2 RTCNT-TB    *                        80914840
0D05 0 D20A          STO   2 WRRTY-TB    SET RETRY COUNTER        80914850
0D06 1 6D00 0DC2     STX   L1 VERFX&1    SAVE INDEX 1             80914860
0D08 1 6780 08B5     LDX   I3 VERFY      GET CALLING ADRS+1       80914870
0D0A 0 C301          LD      3 1         GET CONTENTS OF CALL+2   80914880
0D0B 0 D01B          STO     TSTCF+1     SET FOR EXIT             80914890
0D0C 1 7402 08B5     MDX   L VERFY,2     SET FOR NORMAL RETURN    80914900
0D0E 0 C300          LD      3 0         GET CYL. DESIRED         80914910
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0D0F 0 D2DA              STO   2 NCYL#-TB    SAVE                        80914920
0D10 0 6303              LDX   3 3           COUNTER                     80914930
                         *                                               80914940
0D11 0 C2DA    VERFA LD    2 NCYL#-TB    GET DESIRED CYL.              80914950
0D12 1 F700 081E         EOR   L3 BADCY-1    CMP WITH BAD CYLS           80914960
0D14 1 4C18 0D26         BZ      TSTCF       BRANCH IF CMP               80914970
0D16 0 73FF              MDX   3 -1          DECR COUNT                  80914980
0D17 0 70F9              B       VERFA       LOOP                        80914990
                         *                                               80915000
0D18 1 6780 0859         LDX   I3 NCYL#      CYL DESIRED TO IX1          80915010
0D1A 0 73FD              MDX   3 -3          TEST FOR 0-3                80915020
0D1B 0 7005              B       TSTCB       BR...4-..                   80915030
                         *                                               80915040
0D1C 1 C700 0818 TSTCA LD    L3 CY000+3    EDITTED CYL                   80915050
0D1E 0 1803              SRA     3           RIGHT-JUSTIFY               80915060
0D1F 0 D2DA              STO   2 NCYL#-TB    SET FOR CALL                80915070
0D20 0 700F              B       SEEK        SEEK CYL.                   80915080
                         *                                               80915090
0D21 0 73AA    TSTCB MDX   3 -86           TEST FOR 4-89                 80915100
0D22 0 7001              B       TSTCC       90-...                      80915110
0D23 0 700C              B       SEEK        4-89                        80915120
                         *                                               80915130
0D24 0 73EB    TSTCC MDX   3 -21           TEST FOR 90-110               80915140
0D25 0 7002              B       TSTCD       111-...                     80915150
0D26 0 4C00 0000 TSTCF B    L  *-*          90-110 TAKE ADRS ERR EXIT   80915160
                         *                                               80915170
0D28 0 73A8    TSTCD MDX   3 -88           TEST FOR 111-198              80915180
0D29 0 7001              B       TSTCE       199-...                     80915190
0D2A 0 7005              B       SEEK        SEEK CYL                    80915200
                         *                                               80915210
0D2B 0 73FC    TSTCE MDX   3 -4            TEST FOR 199-202              80915220
0D2C 0 70F9              B       TSTCF       GREATER THAN 202            80915230
0D2D 0 7304              MDX   3 4           CREATE POINTER TO CY000     80915240
0D2E 0 1000              NOP                 FOR SKIP                    80915250
0D2F 0 70EC              B       TSTCA       GET EDITTED ENTRY           80915260
                         *                                               80915270
                         *-------------------------------------------- 80915280
                         *                                               80915290
                         *       THIS SUBROUTINE WILL ISSUE THE          80915300
                         *       SEEK I/O COMMAND,  CHECK THE DSW        80915310
                         *       FOR ANY ERRORS.                         80915320
                         *                                               80915330
                         *        A MAXIMUM OF EIGHT RETRIES WILL        80915340
                         *       BE MADE ON DSW ERRORS. IF THERE         80915350
                         *       ARE EIGHT SEEK INCOMPLETE ERRORS,       80915360
                         *       THE DFT PROGRAM IS TERMINATED TO PREVENT 80915370
                         *       DAMAGE TO THE DISK DRIVE.               80915380
                         *                                               80915390
                         *       THE LOCK-ON-ERROR OPTION WILL           80915400
                         *       LOCK THE ROUTINE IN THE SEEK SUB-       80915410
                         *       ROUTINE FOR DSW ERRORS OTHER THAN       80915420
                         *       SEEK INCOMPLETE AS LONG AS THE          80915430
                         *       SWITCH IS ON, EVEN IF THE ERROR         80915440
                         *       IS INTERMITTENT.                        80915450
                         *                                               80915460
                         *-------------------------------------------- 80915470
                         *                                               80915480
0D30 0 1010    SEEK  SLA     16            ZERO A REG.                   80915490
0D31 0 D2DB          STO   2 ERSK1-TB      CLEAR ERROR COUNTERS          80915500
0D32 0 C2E6          LD    2 K8-TB         PRESET RETRY CTRS             80915510
0D33 0 D2FD          STO   2 CNTA-TB       * INVALID ADDRESS ERROR       80915520
0D34 0 D2DC          STO   2 CNTB-TB       * SEEK INCOMPLETE ERROR       80915530
0D35 0 6302          LDX   3 SKCNT-SUMRY     POINTER                     80915540
0D36 0 4221          BSI   2 COUNT-TB      INCR SEEK COUNT               80915550
                     *                                                   80915560
                     *     GET IOCC FOR MOVE-ARM-OUT                     80915570
                     *                                                   80915580
0D37 0 C2BD    SEEKA LD    2 XSKBK-TB      IOCC FOR MOVE-ARM-OUT         80915590
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0D38 0 D245              STO   2 COMA-TB     SET CK-NOT-RDY SW           80915600
0D39 0 1890              SRT     16          *  TO Q REG.                80915610
                         *                                               80915620
                         *     TEST FOR FAST OR SLOW ACCESS                15630
                         *                                               80915640
0D3A 0 C20E              LD    2 MODEL-TB    NON-ZERO = FAST ACCESS        15650
0D3B 1 4C20 0D49         BNZ     SEEKC       BRANCH IF NOT ZERO          80915660
                         *                                               80915670
                         *     SLOW  ACCESS                                15680
                         *                                               80915690
0D3D 0 C2DA              LD    2 NCYL#-TB    CYL. DESIRED TO A           80915700
0D3E 0 92D9              S     2 PCYL#-TB    SUBTRACT PRESENT CYL. #     80915710
0D3F 1 4C18 0D79         BZ      VERFB       BR IF ZERO                  80915720
0D41 1 4C28 0D46         BN      SEEKB       BRANCH ON MOVE TOWARD HOME  80915730
0D43 0 1883              SRT     3           ZERO BIT 13 IN Q REG. TO    80915740
0D44 0 1083              SLT     3           *  INDICATE MOVE ARM IN     80915750
0D45 0 7004              B       SEEKD       *                           80915760
                         *                                               80915770
0D46 0 F28C    SEEKB EOR   2 TERM-TB       FORM TWO'S COMPLEMENT       80915780
0D47 0 82E1          A     2 K1-TB         *  OF # OF CYL. MOVEMENTS   80915790
0D48 0 7001          B       SEEKD         *                           80915800
                         *                                               80915810
0D49 0 C2DA    SEEKC LD    2 NCYL#-TB    CYL. DESIRED TO A             80915820
                         *                                               80915830
0D4A 0 DAC9    SEEKD STD   2 ZXIO-TB      SET IOCC FOR XEQ CALL       80915840
0D4B 0 DAD3          STD   2 MOD3-TB       *                           80915850
0D4C 0 423C          BSI   2 XEQ-TB        CALL EXECUTE I/O            80915860
                         *                                               80915870
                         *     CHECK DSW FOR ERROR                       80915880
                         *                                               80915890
0D4D 0 100A              SLA     10          CHECK FOR SEEK ERROR        80915900
0D4E 1 4C28 0D5B         BN      SEEKF       BRANCH ON ERROR             80915910
                         *                                               80915920
                         *     CHECK FOR PREVIOUS ERROR(S)               80915930
                         *                                               80915940
0D50 0 C2DB              LD    2 ERSK1-TB    GET ERROR SWITCH            80915950
0D51 0 D2D3              STO   2 MOD3-TB     STORE FOR PRINT             80915960
0D52 1 4C18 0D79         BZ      VERFB       BR IF NO ERROR              80915970
0D54 0 4218              BSI   2 CKLK-TB     CHECK LOCK-ON-ERROR OPTION  80915980
0D55 1 0D37              DC      SEEKA       BRANCH IF SET               80915990
0D56 0 4230              BSI   2 STMSG-TB    RECOVERED ERROR             80916000
0D57 0 4A01              DC      /4A01       MESSAGE ID                  80916010
0D58 0 6303              LDX   3 SFTSK-SUMRY     POINTER                 80916020
0D59 0 4221              BSI   2 COUNT-TB    INCR SOFT SEEK ERROR        80916030
0D5A 0 701E              B       VERFB       NOT SET/ NORMAL EXIT        80916040
                         *                                               80916050
                         *     FOUND DSW ERROR                           80916060
                         *                                               80916070
0D5B 1 7401 085A SEEKF MDX  L  ERSK1,1      SET ERROR SWITCH            80916080
                         *                                               80916090
                         *     GET PRESENT DSW                           80916100
                         *                                               80916110
0D5D 0 0ACB              XIO   2 SNXIO-TB    SENSE DSW                   80916120
0D5E 0 100A              SLA     10          HAS SEEK ERROR BEEN RESET   80916130
0D5F 1 4C28 0D70         BN      SEEKG       *  BRANCH IF NO             80916140
                         *                                               80916150
                         *     INVALID ADDRESS DSW ERROR                 80916160
                         *                                               80916170
0D61 0 4230              BSI   2 STMSG-TB    PRINT INVALID ADDRS ERROR   80916180
0D62 0 0E05              DC      /0E05       MESSAGE ID                  80916190
0D63 0 C2DB              LD    2 ERSK1-TB    GET ERROR SWITCH            80916200
0D64 0 4218              BSI   2 CKLK-TB     CHECK LOCK-ON-ERROR OPTION  80916210
0D65 1 0D37              DC      SEEKA       BRANCH IF SET               80916220
0D66 1 74FF 087C         MDX  L  CNTA,-1     DECREMENT RETRY CNTR A      80916230
0D68 0 70CE              MDX     SEEKA       NOT EIGHT RETRIES YET       80916240
                         *                                               80916250
                         *     DSW ERROR EXIT                            80916260
                         *                                               80916270
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0D69 0 CAD9            LDD   2 PCYL#-TB   SET PRINT MSG                80916280
0D6A 0 DAD3            STD   2 MOD3-TB    *                           80916290
0D6B 0 4230            BSI   2 STMSG-TB   UNRECOVERED ERROR           80916300
0D6C 0 3E06            DC      /3E06      MESSAGE ID                  80916310
0D6D 0 6304            LDX   3 HRDSK-SUMRY     POINTER                80916320
0D6E 0 4221            BSI   2 COUNT-TB   INCR HARD SEEK ERROR        80916330
0D6F 0 421E            BSI   2 CNTLE-TB   EXIT ROUTINE                80916340
                  *                                                   80916350
                  *    SEEK INCOMPLETE ERROR (200 MS ONE-SHOT)        80916360
                  *                                                   80916370
0D70 0 4230       SEEKG BSI   2 STMSG-TB   SEEK INCOMPLETE ERROR(DSW) 80916380
0D71 0 0E07            DC      /0E07      MESSAGE ID                  80916390
0D72 1 74FF 085B       MDX   L CNTB,-1    DECR RETRY COUNTER          80916400
0D74 0 70C2            B       SEEKA      LOOP                        80916410
0D75 0 6304            LDX   3 HRDSK-SUMRY   COUNT HARD SEEK ERROR    80916420
0D76 0 4221            BSI   2 COUNT-TB   *                           80916430
0D77 0 4233            BSI   2 TEXIT-TB   TERMINATE DFT               80916440
                  *--------------------------------------------------- 80916450
                  *                                                   80916460
                  *                                                   80916470
                  *                                                   80916480
0A30 0            BDCYL EQU     ENDCM-8    USED IN VERFY ONLY          80916490
                  *                                                   80916500
                  *                                                   80916510
                  *              READ EIGHT SECTOR IDS                80916520
                  *                                                   80916530
0D78 0 0000       TMPX  DC      *-*        SECTOR POINTER              80916540
0D79 0 61F8       VERFB LDX   1 -8         SET LOOP COUNTER            80916550
0D7A 0 69FD       VERFC STX   1 TMPX       SET SECTOR TO READ          80916560
0D7B 0 C0FC            LD       TMPX       GET SECTOR TO READ          80916570
0D7C 0 E2E5            AND   2 K7-TB      SAVE SECTOR ID              80916580
0D7D 0 4224            BSI   2 READ-TB    READ W/O CHECKING             16590
0D7E 0 4001            DC      1+/4000    WD COUNT                      16600
0D7F 0 C246            LD    2 COMA&1-TB  GET ID READ                 80916610
0D80 1 D500 0A38       STO   L1 BDCYL&8   SAVE                        80916620
0D82 0 7101            MDX   1 1          DECR LOOP CTR               80916630
0D83 0 70F6            B       VERFC      LOOP                        80916640
                  *                                                   80916650
                  *              CHECK FOR ALL 8 CYLINDER IDS         80916660
                  *              THE SAME                             80916670
                  *                                                   80916680
0D84 0 61F9            LDX   1 -7         SET LOOP COUNTER            80916690
0D85 1 C400 0A30  VERFD LD    L BDCYL      CK FOR ALL SAME CYLINDER    80916700
0D87 1 F500 0A38       EOR   L1 BDCYL&8   *                           80916710
0D89 0 1803            SRA     3          *                           80916720
0D8A 1 4C20 0DCF       BNZ     VERFJ      BRANCH IF NOT               80916730
0D8C 0 7101            MDX   1 1          DECR LOOP CTR               80916740
0D8D 0 70F7            B       VERFD      LOOP                        80916750
                  *                                                   80916760
                  *              CHECK SECTORS FOR SEQUENTIAL         80916770
                  *                                                   80916780
0D8E 0 61F8            LDX   1 -8         SET LOOP CTR                80916790
0D8F 0 69E8       VERFE STX   1 TMPX       CK FOR SEQ SECTORS          80916800
0D90 1 C500 0A38       LD    L1 BDCYL&8   *                           80916810
0D92 0 F0E5            EOR     TMPX       *                           80916820
0D93 0 E2E5            AND   2 K7-TB      *                           80916830
0D94 1 4C20 0DCF       BNZ     VERFJ      BRANCH ON ERROR             80916840
0D96 0 7101            MDX   1 1          DECR LOOP CTR               80916850
0D97 0 70F7            B       VERFE      LOOP                        80916860
                  *                                                   80916870
                  *              CHECK FOR EXPECTED CYLINDER          80916880
                  *                                                   80916890
0D98 0 CAD9            LDD   2 PCYL#-TB   SET PRINT MESSAGE           80916900
0D99 0 DAD3            STD   2 MOD3-TB    *                           80916910
0D9A 0 C246            LD    2 COMA&1-TB  CK FOR EXPECTED CYLINDER    80916920
0D9B 0 1883            SRT     3          *                           80916930
0D9C 0 D2D5            STO   2 MOD5-TB    SAVE FOR PRINT              80916940
0D9D 0 D2D9            STO   2 PCYL#-TB   SET AS PRESENT CYLINDER      80916950
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0D9E 0 F2DA            EOR   2 NCYL#-TB   IS IT EXPECTED              80916960
0D9F 1 4C18 0DB9       BZ      VERFI      BRANCH IF YES               80916970
                  *                                                   80916980
                  *              CYLINDER ID NOT AS EXPECTED          80916990
                  *                                                   80917000
0DA1 0 4230            BSI   2 STMSG-TB   PRINT MESSAGE               80917010
0DA2 0 AE0D            DC      /AE0D      MESSAGE ID                  80917020
0DA3 0 6303            LDX   3 SFTSK-SUMRY    COUNT SOFT SEEK ERROR   80917030
0DA4 0 4221            BSI   2 COUNT-TB   *                           80917040
0DA5 1 74FF 0889       MDX   L WRRTY,-1   DECR RETRY COUNTER          80917050
0DA7 0 7088            B       SEEK       RETRY THE SEEK              80917060
                  *                                                   80917070
                  *              UNABLE TO REACH DESIRED CYLINDER     80917080
                  *                                                   80917090
0DA8 0 61FB       VERFF LDX   1 -5         SET LOOP COUNTER            80917100
0DA9 1 CD00 0A35  VERFG LDD   L1 BDCYL&5   SET HARD ERROR MSG          80917110
0DAB 0 DAD3            STD   2 MOD3-TB    *                           80917120
0DAC 1 CD00 0A37       LDD   L1 BDCYL&7   *                           80917130
0DAE 0 DAD5            STD   2 MOD5-TB    *                           80917140
0DAF 0 7104            MDX   1 4          DECR CTR                    80917150
0DB0 0 7005            MDX     VERFH      BRANCH                      80917160
0DB1 0 4230            BSI   2 STMSG-TB   PRINT 2ND LINE W/O PID,MID     17170
0DB2 0 8E8E            DC      /8E0E+/80  FORM NO/MSG ID                17180
0DB3 0 6304            LDX   3 HRDSK-SUMRY    COUNT HARD SEEK ERROR   80917190
0DB4 0 4221            BSI   2 COUNT-TB   *                           80917200
0DB5 0 4233            BSI   2 TEXIT-TB   TERMINATE DFT               80917210
0DB6 0 4230       VERFH BSI   2 STMSG-TB   PRINT LINE 1               80917220
0DB7 0 8E0E            DC      /8E0E      MESSAGE ID                  80917230
0DB8 0 70F0            B       VERFG      BRANCH                      80917240
                  *                                                   80917250
                  *              REACHED PROPER CYLINDER-CHECK        80917260
                  *              FOR PREVIOUS ERRORS                  80917270
                  *                                                   80917280
0DB9 0 C20A       VERFI LD    2 WRRTY-TB   CK PREVIOUS ERRORS          80917290
0DBA 0 92E6            S     2 K8-TB      *                           80917300
0DBB 1 4C18 0DC1       BZ      VERFX      GO EXIT RTN                 80917310
0DBD 0 4218            BSI   2 CKLK-TB    CHECK LOCK ON ERROR         80917320
0DBE 1 0D30            DC      SEEK       RETURN IF ON                80917330
0DBF 0 4230            BSI   2 STMSG-TB   PRINT RECOVERED ERROR       80917340
0DC0 0 5A06            DC      /5A06      MESSAGE ID                  80917350
0DC1 0 6500 0000  VERFX LDX   L1 *-*       RESTORE INDEX 1             80917360
                  *                                                   80917370
                  *              CHECK HOME BIT FOR EXPECTED          80917380
                  *                                                   80917390
0DC3 0 C2D9            LD    2 PCYL#-TB   GET PRESENT CYLINDER         80917400
0DC4 0 D2D3            STO   2 MOD3-TB    *                           80917410
0DC5 0 4820            SKP     Z          SKIP IF CYL ZERO            80917420
0DC6 0 C28C            LD    2 TERM-TB    MAKE HOME BIT ZERO          80917430
0DC7 0 F2C7            EOR   2 ZSNS-TB    *                           80917440
0DC8 0 1004            SLA     4          CHECK HOME BIT              80917450
0DC9 1 4CA8 08B5       BN    I VERFY      EXIT ROUTINE                80917460
0DCB 0 4230            BSI   2 STMSG-TB   PRINT HOME BIT INCORRECT     80917470
0DCC 0 4E12            DC      /4E12      MESSAGE ID                  80917480
0DCD 1 4C80 08B5       B     I VERFY      EXIT ROUTINE                80917490
                  *                                                   80917500
                  *              SECTOR IDS ARE NOT SEQUENTIAL        80917510
                  *                                                   80917520
0DCF 1 74FF 0888  VERFJ MDX   L RTCNT,-1   DECR RETRY COUNTER          80917530
0DD1 0 70A7            B       VERFB      GO RETRY READ (NOT SEEK)    80917540
0DD2 0 70D5            B       VERFF      ERROR BRANCH                80917550
                  *--------------------------------------------------- 80917560
                  *--------------------------------------------------- 80917570
                  *=================================================== 80917580
                  *                                                   80917590
                  *              READ SUB-ROUTINE                     80917600
                  *                                                   80917610
                  *=================================================== 80917620
                  *                                                   80917630
```

```
                *            THIS ROUTINE WILL ISSUE THE -                  80917640
                *            READ OPERATION, CHECK THE DSW                  80917650
                *            FOR ERRORS AND CALL THE                        80917660
                *            COMPARE SUB-ROUTINE TO CHECK                   80917670
                *            FOR ANY ERRORS.                                80917680
                *                                                           80917690
                *            A MAXIMUM OF EIGHT RETRYS WILL                 80917700
                *            BE MADE ON BOTH A DSW OR A                     80917710
                *            COMPARE ERROR.                                 80917720
                *                                                           80917730
                *            THE LOCK ON ERROR OPTION WILL                  80917740
                *            LOCK THE ROUTINE IN THE READ                   80917750
                *            OPTION AS LONG AS THE SWITCH                   80917760
                *            IS ON EVEN IF THE ERROR IS                     80917770
                *            INTERMITTENT.                                  80917780
                *                                                           80917790
                **** ROUTINE CALL                                           80917800
                *                                                           80917810
                *    (A)=SECTOR COUNT                                       80917820
                *    BSI   2 READ-TB                                        80917830
                *    DC      WDCNT       NO. OF WORDS TO BE READ            80917840
                *                        * BIT 0 EQUAL 1 MEANS USE          80917850
                *                        * RANDOM DATA FOR COMPARE          80917860
                *                        * BIT 1 EQUAL 1 MEANS TO             17861
                *                        * READ AND RETURN WITHOUT
                *                        * CHECKING THE DSW OR DATA
                *    DC      NUMBER      USED IN COMPARE                    80917870
                *    DC      CMPERR      ADRS OF CMP ERROR RETURN           80917880
                *                                                           80917890
                *-------------------------------------------               80917990
0DD3 0 EAC3     RDEN  OR    2 DSKMD-TB  COMBINE WITH READ                  80918000
0DD4 0 1890           SRT     16        A TO Q                             80918010
0DD5 0 D2DF           STO   2 RDDSW-TB  CLEAR DSW ERROR COUNTER            80918020
0DD6 0 D2E0           STO   2 RDCMP-TB  CLEAR CMP ERROR COUNTER            80918030
0DD7 0 C215           LD    2 ADCMA-TB                                     80918040
0DD8 0 DAC9           STD   2 ZXIO-TB   SET FOR XEQ CALL                  80918050
0DD9 0 108D           SLT     13        SECTOR TO 0-2 Q REG.               80918060
0DDA 0 C2DA           LD    2 NCYL#-TB  GET CYL. # WHERE DISK S/B          80918070
                *                       *   AFTER LAST SEEK              80918080
0DDB 0 1083           SLT     3         COMBINE FOR COMPARE                80918090
0DDC 0 D206           STO   2 IDS#B-TB  PRESENT SECTOR ID                  80918100
                *                                                          80918110
                *                                                          80918120
0DDD 1 6780 08A3      LDX   I3 READ     GET CALLING ADRS+1                 80918130
0DDF 0 C300           LD    3 0         GET WORD COUNT                     80918160
0DE0 0 D2FE           STO   2 RNDCK-TB  IF NEG. USE RANDOM NUMBERS         80918170
0DE1 0 1001           SLA     1         CLEAR BIT 0/BIT 1 SET                18171
0DE2 0 D2FF           STO   2 NOCK-TB   * MEANS DON'T CHECK FOR ER
0DE3 0 1001           SLA     1         CLEAR BIT 1                          18180
0DE4 0 1802           SRA     2         *
0DE5 0 D245           STO   2 COMA-TB   WORD COUNT                         80918200
0DE6 0 D200           STO   2 LNGTH-TB  *  FOR COMPARE RTN                 80918210
0DE7 0 C301           LD    3 1         GET NUMBER                         80918220
0DE8 0 D20D           STO   2 CMPTM-TB  *  FOR COMPARE RTN                 80918230
0DE9 0 C302           LD    3 2         GET CMP ERROR ADRS                 80918240
0DEA 0 D02A           STO     RDCPX+1   SET FOR CMP ERROR EXIT             80918250
0DEB 1 7401 08A3      MDX   L READ,1    INCR FOR NO-CHECK RETURN           80918260
0DED 0 6305           LDX   3 RDCNT-SUMRY POINTER FOR SUMMARY              80918270
0DEE 0 4221           BSI   2 COUNT-TB  INCR READ COUNT                    80918280
                *                                                          80918290
0DEF 0 CAE6     READA LDD   2 K8-TB     SET RETRY COUNTER                  80918300
0DF0 0 DADD           STD   2 RTRYA-TB  * TO 8                             80918310
                *                                                          80918320
                *                   PRESET I/O AREA TO /FFFF               80918330
                *                                                          80918340
0DF1 0 C28C     READB LD    2 TERM-TB   /FFFF                              80918350
0DF2 0 422A           BSI   2 SETV-TB   CALL PRESET ROUTINE                80918360
                *                                                          80918370
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                *                   ISSUE A READ OPERATION                 80918380
                *                   THRU THE XEQ SUB-ROUTINE               80918390
                *                                                          80918400
0DF3 0 423C           BSI   2 XEQ-TB    ISSUE READ COMMAND                 80918410
                *                                                          80918420
                *    IF NOCK NEG DONT CHECK FOR                            80918430
                *    DSW ERRORS, BUT EXIT AS IF NORMAL READ.               80918440
                *                                                          80918450
0DF4 0 C2FF           LD    2 NOCK-TB   GET NO CHECK SWITCH                80918460
0DF5 1 4C28 0E09      BN      RDNCK     EXIT IF NEGATIVE                   80918470
                *                                                          80918480
                *                   CHECK DSW FOR ERRORS                   80918490
                *                                                          80918500
0DF7 0 C2C7           LD    2 ZSNS-TB   INTRPT DSW                         80918510
0DF8 1 4C28 0E16      BN      RDER2     BRANCH ON ERROR                    80918520
0DFA 0 4039           BSI     CMP       CALL COMPARE RTN                   80918530
0DFB 0 700F           B       RDER1     COMPARE ERROR RETURN               80918540
0DFC 0 CADF           LDD   2 RDDSW-TB  GET ERROR COUNTS                   80918550
0DFD 0 DAD3           STD   2 MOD3-TB   STORE IN CASE PRINT                80918560
0DFE 0 82E0           A     2 RDCMP-TB  ADD COMPARE ERRORS                 80918570
0DFF 1 4C18 0E07      BZ      READX     BRANCH IF NO ERRORS                80918580
0E01 0 4218           BSI   2 CKLK-TB   CHECK LOCK ON ERROR SW             80918590
0E02 1 0DEF           DC      READA     IF SET                             80918600
0E03 0 6306           LDX   3 SFTRD-SUMRY     POINTER                      80918610
0E04 0 4221           BSI   2 COUNT-TB  SOFT READ ERROR                    80918620
0E05 0 4230           BSI   2 STMSG-TB  PRINT MESSAGE                      80918630
0E06 0 3A02           DC      /3A02     FORM NO./MID                       80918640
                *                                                          80918650
0E07 1 7402 08A3 READX MDX  L READ,2    INCR FOR NORMAL RETURN             80918660
                *                                                          80918670
0E09 1 4C80 08A3 RDNCK B    I READ      RETURN                             80918680
                *                                                          80918690
0E0B 1 7401 085F RDER1 MDX  L RDCMP,1   COUNT COMPARE ERROR                80918700
0E0D 1 74FF 085C      MDX   L RTRYA,-1  DECR RETRY COUNTER                 80918710
0E0F 0 70E1           B       READB     LOOP                               80918720
0E10 0 CADF           LDD   2 RDDSW-TB  GET ERROR COUNTERS                 80918730
0E11 0 DAD3           STD   2 MOD3-TB   STORE FOR PRINT                    80918740
0E12 0 4230           BSI   2 STMSG-TB  PRINT MESSAGE                      80918750
0E13 0 3A05           DC      /3A05     FORM NO./MID                       80918760
0E14 0 4C00 0000 RDCPX B    L *-*       COMPARE ERROR EXIT                 80918770
                *                                                          80918780
0E16 0 C2DF     RDER2 LD    2 RDDSW-TB  GET DSW ERROR COUNT                80918790
0E17 1 7401 085E      MDX   L RDDSW,1   BUMP COUNT                         80918800
0E19 0 421B           BSI   2 CKPRT-TB  CK PRINT-ALL-ERRORS OPTION         80918810
0E1A 0 7002           B       RDR2B     BR AROUND PRINT                    80918820
0E1B 0 4230           BSI   2 STMSG-TB  PRINT ERROR MESSAGE                80918830
0E1C 0 5E09           DC      /5E09     MESSAGE ID                         80918840
0E1D 0 4016     RDR2B BSI       CMP     CALL COMPARE RTN                   80918850
0E1E 0 700F           B       RDER4     COMPARE ERROR RETURN               80918860
0E1F 1 74FF 085C      MDX   L RTRYA,-1  DECR RETRY COUNTER                 80918870
0E21 0 70CF           B       READB     LOOP                               80918880
                *                                                          80918890
0E22 0 CADF     RDER3 LDD   2 RDDSW-TB  GET ERROR COUNTERS                 80918900
0E23 0 DAD3           STD   2 MOD3-TB   STORE IN CASE PRINT                80918910
0E24 0 4218           BSI   2 CKLK-TB   CHECK LOCK-ON-ERROR                80918920
0E25 1 0DEF           DC      READA     IF SET                             80918930
0E26 0 4230           BSI   2 STMSG-TB  PRINT MESSAGE                      80918940
0E27 0 3E0A           DC      /3E0A     FORM NO./MID                       80918950
0E28 0 6307           LDX   3 HRDRD-SUMRY     POINTER                      80918960
0E29 0 4221           BSI   2 COUNT-TB  HARD READ ERROR                    80918970
0E2A 0 C2DD           LD    2 RTRYA-TB  GET DSW RETRY COUNTER              80918980
0E2B 1 4C18 0E07      BZ      READX     NORMAL EXIT/NO CMP ERRORS          80918990
                *                       *  ON LAST READ                    80919000
0E2D 0 70E6           B       RDCPX     TAKE CMP ERROR EXIT                80919010
                *                                                          80919020
0E2E 1 7401 085F RDER4 MDX  L RDCMP,1   INCR CMP ERROR COUNT               80919030
0E30 1 74FF 085D      MDX   L RTRYB,-1  DECR CMP ERROR COUNT               80919040
0E32 0 70BE           B       READB     LOOP                               80919050
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0E33 0 70EE                B       RDER3       GO EXIT                          80919060
                     *-------------------------------------------------------- 80919070
                     *-------------------------------------------------------- 80919080
                     *======================================================== 80919090
                     *                                                        80919100
                     *                    COMPARE SUB-ROUTINE                 80919110
                     *                                                        80919120
                     *======================================================== 80919130
                     *             THIS ROUTINE WILL CHECK ADRS               80919140
                     *             READ AGAINST ADRS EXPECTED AND             80919150
                     *             COMPARE DATA EXPECTED AGAINST              80919160
                     *             DATA READ.                                 80919170
                     *                                                        80919180
                     *             ERROR PRINTOUTS WILL INCLUDE               80919190
                     *             ADRS, WORD NUMBER, EXPECTED,               80919200
                     *             RECEIVED AND TOTAL NUMBER OF               80919210
                     *             ERRORS.                                    80919220
                     *                                                        80919230
                     *             AN OPTION OF PRINT ONLY FIRST              80919240
                     *             ERROR OR PRINT ALL ERRORS IS               80919250
                     *             PROVIDED                                   80919260
                     *                                                        80919270
                     **** ROUTINE CALL                                        80919280
                     *                                                        80919290
                     *     BSI     CMP                                        80919300
                     *     MDX     CMPERR      ERROR RETURN                   80919310
                     *-------------------------------------------             80919320
                     *                                                        80919330
0E34 0 0000          CMP    DC       *-*         ROUTINE ENTRANCE            80919340
0E35 0 1010                 SLA      16          ZERO A                      80919350
0E36 0 D202                 STO    2 ERCT-TB     CLEAR ERROR COUNT           80919360
0E37 0 D207                 STO    2 LPRNT-TB    CLEAR LAST-WORD-PRINTED     80919370
0E38 0 C2E1                 LD     2 K1-TB       SET INDEX TO ONE            80919380
0E39 0 D201                 STO    2 INDEX-TB    *                           80919390
                     *                                                       80919400
0E3A 0 C200                 LD     2 LNGTH-TB    GET RECORD LENGTH           80919410
0E3B 1 4C18 0E58            BZ       CMP3        BRANCH IF ZERO              80919420
0E3D 0 C20D                 LD     2 CMPTM-TB    GET NUMBER TO COMPARE WITH  80919430
0E3E 0 D205                 STO    2 S#B&1-TB    SET                         80919440
0E3F 0 CA06                 LDD    2 IDS#B-TB    GET ID EXPECTED             80919450
0E40 0 DA03                 STD    2 S#B-1-TB    SET                         80919460
0E41 0 402C                 BSI      CMPB        GO MAKE COMPARISION         80919470
0E42 0 C20D                 LD     2 CMPTM-TB    SET NUMBER                  80919480
0E43 0 D204                 STO    2 S#B-TB      SET                         80919490
0E44 0 7004                 B        CMP2        CHECK FOR FINISHED          80919500
0E45 0 C2FE          CMP1   LD     2 RNDCK-TB    GET RANDOM INDICATOR        80919510
0E46 1 4C28 0EA1            BN       CMRND       BRANCH IF ON                80919520
0E48 0 705B                 B        CMRN1       GO TEST FOR BAD DATA        80919530
0E49 1 7401 0880     CMP2   MDX  L   INDEX,1      INCR INDEX                  80919540
0E4B 0 C201                 LD     2 INDEX-TB    GET CONTENTS INDEX          80919550
0E4C 0 9200                 S      2 LNGTH-TB    CK FOR COMPLETE             80919560
0E4D 1 4C08 0E45            BNP      CMP1        BRANCH IF NOT FINISHED      80919570
0E4F 0 C202                 LD     2 ERCT-TB     GET ERROR CNT               80919580
0E50 0 D2D3                 STO    2 MOD3-TB     STORE FOR PRINT             80919590
0E51 1 4C18 0E58            BZ       CMP3        BRANCH IF ZERO              80919600
0E53 0 C2E0                 LD     2 RDCMP-TB    GET CMP ERROR COUNT         80919610
0E54 0 421B                 BSI    2 CKPRT-TB    CK PRINT-ALL-ERRORS         80919620
0E55 0 7002                 B        CMP3        BRANCH IF NOT SET           80919630
0E56 0 4230                 BSI    2 STMSG-TB    PRINT NO. OF ERRORS           19640
0E57 0 4E90                 DC       /4E10+/80   FORM #/MSG ID                 19650
                     *                                                       80919660
0E58 1 6780 0880     CMP3   LDX  I3  INDEX       IX EQUAL WD CT              80919670
0E5A 1 C700 08C4            LD   L3  COMA        GET REC LNGTH &1            80919680
0E5C 1 8700 08C5            A    L3  COMA&1      ADD REC LNGTH &2            80919690
0E5E 0 82E2                 A      2 K2-TB       ADD 2                       80919700
0E5F 1 4C18 0E67            BZ       CMPX        BRANCH IF AS EXPECTED       80919710
0E61 0 C2E0                 LD     2 RDCMP-TB    GET CMP ERROR COUNT         80919720
0E62 0 421B                 BSI    2 CKPRT-TB    CK PRINT-ALL-ERRORS OPTION  80919730
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0E63 0 7002                B       CMP4        BRANCH IF NOT SET           80919740
0E64 0 4230                BSI    2 STMSG-TB   PRINT OVERREAD              80919750
0E65 0 7E11                DC       /7E11      MSG ID                      80919760
0E66 0 C2E1          CMP4  LD     2 K1-TB      MAKE SURE A REG. NON-ZERO   80919770
0E67 0 8202          CMPX  A      2 ERCT-TB    CK IF ANY ERRORS            80919780
0E68 1 4C20 0E6C           BNZ      CMPEX       BRANCH IF YES               80919790
0E6A 1 7401 0E34           MDX  L   CMP,1       INCR RETURN                 80919800
0E6C 1 4C80 0E34     CMPEX BSC  I   CMP         EXIT ROUTINE                80919810
                     *                                                      80919820
0E6E 0 0000          CMPB  DC       *-*         ENTRY                       80919830
0E6F 1 6780 0880           LDX  I3  INDEX       GET INDEX                   80919840
0E71 1 F700 08C4           EOR  L3  COMA        COMPARE WITH S/B            80919850
0E73 1 4C98 0E6E           BZ   I   CMPB        EXIT IF EQUAL               80919860
0E75 1 7700 08C4           MDX  L3  COMA        INCR IX BY ADRS OF COMA     80919870
0E77 0 1000                NOP                  64K PROTECT                 80919871
0E78 0 6B37                STX    3 PNTC+1      SET FOR POINTER             80919880
0E79 0 C202                LD     2 ERCT-TB     GET ERROR CNT MINUS 1       80919890
0E7A 1 7401 0881           MDX  L   ERCT,1      INCREMENT ERROR COUNT       80919900
0E7C 1 4C18 0E8B           BZ       CMPB2       BRANCH IF FIRST CMP ERROR   80919910
                     *                                                      80919920
                     *    CHECK PRINT ALL ERRORS OPTION                     80919930
                     *                                                      80919940
0E7E 0 421B                BSI    2 CKPRT-TB    CK PRINT-ALL-ERRORS OPTION  80919950
0E7F 0 701F                B        CMPB6       BRANCH IF NOT SET           80919960
                     *                                                      80919970
                     *    PRINT ADDITIONAL ERRORS                           80919980
                     *                                                      80919990
0E80 0 C207          CMPB1 LD     2 LPRNT-TB    TEST TO SEE IF BAD WORDS    80920000
0E81 0 82E1                A      2 K1-TB       * AND PREVIOUS WORD HAVE    80920010
0E82 0 9201                S      2 INDEX-TB    * BEEN PRINTED YET          80920020
0E83 1 4C18 0E97           BZ       CMPB4       BRANCH TO PRINT BAD WORD    80920030
0E85 1 4C28 0E95           BN       CMPB3       BRANCH/PRINT PREVIOUS WORD  80920040
0E87 0 92E1                S      2 K1-TB       TEST FOR NEXT WORD PRINTED  80920050
0E88 1 4CA0 0E6E           BNZ  I   CMPB        EXIT IF LAST WORD           80920060
0E8A 0 700E                B        CMPB5       BAD WORD+1 NOT PRINTED YET  80920070
                     *                                                      80920080
0E8B 0 C2E0          CMPB2 LD     2 RDCMP-TB    GET CMP ERROR COUNT         80920090
0E8C 0 421B                BSI    2 CKPRT-TB    CK PRINT-ALL-ERRORS OPTION  80920100
0E8D 0 7002                B        CMP2A       BRANCH IF NOT SET           80920110
0E8E 0 4230                BSI    2 STMSG-TB    PRINT MESSAGE               80920120
0E8F 0 7E10                DC       /7E10       MESSAGE ID                  80920130
0E90 0 C201          CMP2A LD     2 INDEX-TB    GET POINTER                 80920140
0E91 0 92E1                S      2 K1-TB       * TO ONE (1)                80920150
0E92 1 4C20 0E80           BNZ      CMPB1       BRANCH IF NOT EQUAL         80920160
0E94 0 7002                B        CMPB4       PRINT BAD WORD              80920170
                     *                                                      80920180
                     *    PRINT WORD PREVIOUS TO BAD WORD                   80920190
                     *                                                      80920200
0E95 0 63FF          CMPB3 LDX    3 -1          INDEX-1                     80920210
0E96 0 4014                BSI      PNTB        PRINT                       80920220
                     *                                                      80920230
                     *    PRINT BAD WORD                                    80920240
                     *                                                      80920250
0E97 0 6300          CMPB4 LDX    3 0           SET POINTER                 80920260
0E98 0 4012                BSI      PNTB        PRINT                       80920270
                     *                                                      80920280
                     *    TEST IF LAST WORD                                 80920290
                     *                                                      80920300
0E99 0 C200          CMPB5 LD     2 LNGTH-TB    GET RECORD LNGTH            80920310
0E9A 0 9201                S      2 INDEX-TB    TEST FOR END                80920320
0E9B 1 4C98 0E6E           BZ   I   CMPB        EXIT IF LAST WORD WAS JUST  80920330
                     *                          * PRINTED                   80920340
                     *                                                      80920350
                     *    PRINT WORD FOLLOWING BAD WORD                     80920360
                     *                                                      80920370
0E9D 0 6301                LDX    3 1           SET POINTER                 80920380
0E9E 0 400C                BSI      PNTB        PRINT FORM 2                80920390
0E9F 1 4C80 0E6E     CMPB6 B    I   CMPB        RETURN                      80920400
```

```
0EA1 0 C204
0EA2 0 4227
0EA3 0 D205
0EA4 0 C204
0EA5 0 40C8
0EA6 0 C204
0EA7 0 D203
0EA8 0 C205
0EA9 0 D204
0EAA 0 709E

0EAB 0 0000
0EAC 0 C2E0
0EAD 0 421B
0EAE 0 700F
0EAF 0 C700 0000
0EB1 0 D2D5
0EB2 1 C700 0883
0EB4 0 D2D4
0EB5 1 7780 0880
0EB7 0 1000
0EB8 1 6F00 0852
0EBA 1 6F00 0886
0EBC 0 4230
0EBD 0 6E90
0EBE 1 4C80 0EAB
```

```
*                                                              80920410
CMRND LD    2 S#B-TB      GET CURRENT NUMBER                   80920420
      BSI   2 RNDOM-TB    GET NEXT NUMBER                      80920430
      STO   2 S#B&1-TB    SET                                  80920440
CMRN1 LD    2 S#B-TB      CK CURRENT NUMBER                    80920450
      BSI     CMPB        *                                    80920460
      LD    2 S#B-TB      SET PREVIOUS NUMBER                  80920470
      STO   2 S#B-1-TB    *                                    80920480
      LD    2 S#B&1-TB    SET CURRENT NUMBER                   80920490
      STO   2 S#B-TB      *                                    80920500
      B       CMP2        CK FOR COMPLETE                      80920510
*                                                              80920520
PNTB  DC      *-*         ENTRY                                80920530
      LD    2 RDCMP-TB    GET CMP ERROR COUNT                  80920540
      BSI   2 CKPRT-TB    CK PRINT-ALL-ERRORS OPTION           80920550
      B       PNTBX       DON'T PRINT IF NOT SET               80920560
PNTC  LD    L3 *-*        GET WORD READ                        80920570
      STO   2 MOD5-TB     SET FOR PRINT                        80920580
      LD    L3 S#B        GET WORD EXPECTED                    80920590
      STO   2 MOD4-TB     SET FOR PRINT                        80920600
      MDX   I3 INDEX      ADJUST INDEX                         80920610
      NOP                 IN CASE SKIP OCCURS                  80920620
      STX   L3 MOD3       SET FOR PRINT                        80920630
      STX   L3 LPRNT      SET AS LAST WORD PRINTED             80920640
      BSI   2 STMSG-TB    PRINT W/O PID,MID,RID,RAD              20650
      DC      /6E10+/80   FORM #/MSG ID                          20660
PNTBX B     I   PNTB      EXIT                                 80920670
*------------------------------------------------------------- 80920680
*------------------------------------------------------------- 80920690
*============================================================= 80920700
*                                                              80920710
*                     WRITE ROUTINE                            80920720
*                                                              80920730
*============================================================= 80920740
*                                                              80920750
*                                                              80920760
*            THE ROUTINE WILL INSERT                           80920770
*            THE WORD COUNT AND THE DISK ADRS                  80920780
*            AS THE FIRST TWO WORDS OF THE                     80920790
*            I/O AREA AND ISSUE THE WRITE                      80920800
*            THRU THE XEQ ROUTINE.                             80920810
*                                                              80920820
*            AFTER INTRPT THE DSW IS CHECKED                   80920830
*            FOR ANY ERRORS.                                   80920840
*                                                              80920850
*            IF ERRORS ARE FOUND THE ROUTINE                   80920860
*            WILL RETRY UP TO EIGHT TIMES.                     80920870
*                                                              80920880
*            LOCK ON ERROR OPTION IS                           80920890
*            PROVIDED AND WILL LOCK THE                        80920900
*            ROUTINE IN WRITE ON EITHER AN                     80920910
*            INTERMITTENT OR SOLID ERROR.                      80920920
*                                                              80920930
*            THE LOCK WILL REMAIN IN EFFECT                    80920940
*            UNTIL THE SWITCH IS CLEARED.                      80920950
*                                                              80920960
**** ROUTINE CALL                                              80920970
*                                                              80920980
*     A REG. = SECTOR COUNT                                    80920990
*     BSI   2 WRITE-TB                                         80921000
*     DC      WORD COUNT                                       80921010
*             BIT 0 EQUAL 1 MEANS                              80921020
*             DON'T PRESET I/O AREA.                           80921030
*             BIT 1 MEANS WRITE/RETURN                           21031
*             W/O CKING DSW FOR ERRORS                         80921040
*     DC      NUMBER USED AS PRESET                            80921050
*     DC      ADRS TO RETURN TO                                80921060
*             IF 8 RETRYS FAIL
```



```
0EC0 0 EAC2
0EC1 0 1890
0EC2 0 D20B
0EC3 0 C215
0EC4 0 DAC9
0EC5 0 108D
0EC6 0 C2D9
0EC7 0 1083
0EC8 0 D206
0EC9 0 D246
0ECA 0 6308
0ECB 0 4221
0ECC 0 C2E6
0ECD 0 D20A
0ECE 1 6780 08B8
0ED0 0 C302
0ED1 0 D026
0ED2 0 C300
0ED3 0 D2FF
0ED4 0 18DE
0ED5 0 1802
0ED6 0 D245
0ED7 0 18C1
0ED8 1 4C28 0EDC

0EDA 0 C301
0EDB 0 422A

0EDC 1 7402 08B8

0EDE 0 423C

0EDF 0 C2FF
0EE0 1 4C28 0F05

0EE2 0 C2C7
0EE3 1 4C10 0EF9

0EE5 1 7401 088A

0EE7 0 4230
0EE8 0 5E0B
0EE9 0 C20B
0EEA 0 4218
0EEB 1 0EDE

0EEC 1 74FF 0889
0EEE 0 70EF

0EEF 0 C20B
0EF0 0 D2D3
```

```
*                                                              80921070
*------------------------------------------------------------- 80921190
WRTEN OR    2 WRMOD-TB    COMBINE WITH WRT FNC                 80921200
      SRT     16          A TO Q                               80921210
      STO   2 WRERR-TB    CLEAR ERRO CNT                       80921220
      LD    2 ADCMA-TB    ADRS OF COMA                         80921230
      STD   2 ZXIO-TB     SET FOR XEQ                          80921240
      SLT     13          POSITION SECTOR COUNT                80921250
      LD    2 PCYL#-TB    GET PRESENT CYLINDER                 80921260
      SLT     3           CREATE SECTOR ID                     80921270
      STO   2 IDS#B-TB    UPDATE SECTOR ID                     80921280
      STO   2 COMA+1-TB   SET FOR WRITE OP                     80921290
      LDX   3 WRCNT-SUMRY    POINTER                           80921300
      BSI   2 COUNT-TB    INCR WRITE COUNT                     80921310
      LD    2 K8-TB       SET RETRY COUNTER                    80921320
      STO   2 WRRTY-TB    *  TO EIGHT                          80921330
      LDX  I3 WRITE       GET ADRS OF CALL+1                   80921340
      LD    3 2           GET ERROR RETURN ADDRESS
      STO     WRTE+1      SET FOR EXIT
      LD    3 0           GET WORD COUNT WORD
      STO   2 NOCK-TB     BIT 0 MEANS DON'T CK ERROR
      RTE     30          SAVE BITS 0-1
      SRA     2           WORD CNT W/O BIT 0-1
      STO   2 COMA-TB     SET WORD COUNT
      RTE     1           GET BIT 1 BACK
      BN      WRTF        BIT 0 SET MEANS DON'T                80921410
*                         *  PRESET THE I/O AREA               80921420
      LD    3 1           NUMBER                               80921430
      BSI   2 SETV-TB     PRESET I/O AREA                      80921440
*                                                              80921450
WRTF  MDX   L   WRITE,2   CREATE NORMAL RETURN ADRS            80921460
*                                                              80921470
*                                                              80921480
*                   ISSUE WRITE THRU XEQ RTN                   80921490
*                                                              80921500
WRTA  BSI   2 XEQ-TB      ISSUE WRITE COMMAND                  80921510
*                                                              80921520
*     IF NOCK NEGATIVE, DON'T CHECK FOR                        80921530
*     DSW ERRORS BUT EXIT AS IF NORMAL WRITE.                  80921540
*                                                              80921550
      LD    2 NOCK-TB     GET NO CHECK SWITCH                  80921560
      BN      WRTX2       IF NON-ZERO, EXIT                    80921570
*                                                              80921580
*                   CHECK FOR DSW ERRORS                       80921590
*                                                              80921600
      LD    2 ZSNS-TB     INTRPT DSW                           80921610
      BNN     WRTC        BRANCH IF NO ERROR                   80921620
*                                                              80921630
      MDX   L   WRERR,1   INCR ERROR SWITCH                    80921640
*                                                              80921650
*                   PRINT DSW ERROR MSG                        80921660
*                                                              80921670
      BSI   2 STMSG-TB    CALL SET MSG RTN                     80921680
      DC      /5E0B       MESSAGE ID                           80921690
      LD    2 WRERR-TB    GET ERROR SW                         80921700
      BSI   2 CKLK-TB     CK LOCK ON ERROR                     80921710
      DC      WRTA        RETURN ADRS IF ON                    80921720
*                                                              80921730
*                   LOCK ON ERROR SW IS OFF                    80921740
*                                                              80921750
      MDX   L   WRRTY,-1  DECR RETRY CTR                       80921760
      MDX       WRTA      LOOP-8 TIMES                         80921770
*                                                              80921780
*                   EIGHT RETRYS HAVE FAILED                   80921790
*                   PRINT UNRECOVERABLE WRT                    80921800
*                                                              80921810
      LD    2 WRERR-TB    GET ERROR CNT                        80921820
      STO   2 MOD3-TB     SET FOR PRINT                        80921830
```

```
OEF1 0 4230              BSI   2 STMSG-TB  HARD WRITE ERROR                80921840
OEF2 0 4E0C              DC      /4E0C     MESSAGE ID                      80921850
                         *                                                 80921860
OEF3 0 630A              LDX   3 HRDWR-SUMRY   POINTER                     80921870
OEF4 0 4221              BSI   2 COUNT-TB  INCR HARD WRITE ERROR            80921880
OEF5 0 C28C              LD    2 TERM-TB   GET FFFF                        80921890
OEF6 0 D246              STO   2 COMA&1-TB SET IN I/O AREA                 80921900
OEF7 0 4C00 0000   WRTE  B     L *-*       DSW ERROR EXIT                  80921910
                         *                                                 80921920
                         *          WRITE WAS SUCCESSFUL                   80921930
                         *                                                 80921940
OEF9 0 C20B        WRTC  LD    2 WRERR-TB  ANY PREVIOUS ERRORS               80921950
OEFA 0 D2D3              STO   2 MOD3-TB   SET FOR PRINT                     80921960
OEFB 1 4C18 0F03         BZ      WRTX      BRANCH IF NONE                    80921970
OEFD 0 4218              BSI   2 CKLK-TB   ELSE CHECK LOCK-ON-ERR           80921980
OEFE 1 0EDE              DC      WRTA      RETURN ADRS IF ON                 80921990
OEFF 0 6309              LDX   3 SFTWR-SUMRY   POINTER                     80922000
0F00 0 4221              BSI   2 COUNT-TB  INCR SOFT WRITE ERROR            80922010
0F01 0 4230              BSI   2 STMSG-TB  RECOVERED ERROR                 80922020
0F02 0 4A03              DC      /4A03     MESSAGE ID                      80922030
                         *                                                 80922040
0F03 1 7401 08B8   WRTX  MDX   L WRITE,1    INCR RETURN                     80922050
0F05 0 C28C        WRTX2 LD    2 TERM-TB   GET FFFF                        80922060
0F06 0 D246              STO   2 COMA&1-TB SET IN I/O AREA                 80922070
0F07 1 4C80 08B8         B     I WRITE     EXIT                            80922080
                         *                                                 80922090
                         *-------------------------------------------------80922100
                         *-------------------------------------------------80922110
                         *#################################################80922120
                         *                                                 80922130
                         *          SUB-ROUTINE RNDOM                      80922140
                         *                                                 80922150
                         *#################################################80922160
                         *     RANDOM NUMBER GENERATOR                     80922170
                         *                                                 80922180
                         *          ROUTINE IS ENTERED WITH PREVIOUS NUMBER 80922190
                         *          THAT WAS GENERATED, IN THE A REG.      80922200
                         *                                                 80922210
                         *          ROUTINE EXITS WITH A NEW 16-BIT        80922220
                         *          NUMBER IN THE A REGISTER.              80922230
                         *                                                 80922240
                         **** ROUTINE CALL                                 80922250
                         *     A REG = NUMBER                              80922260
                         *     BSI   2 RNDOM-TB                            80922270
                         *                                                 80922280
                         *-------------------------------------------------80922290
                         *                                                 80922300
0F09 1 4C04 0F10   RNDME BOD     RNDMB     IF ODD JUST COMPLEMENT          80922310
0F0B 0 F28C              EOR   2 TERM-TB   ELSE COMPLEMENT...              80922320
0F0C 0 A2C1              M     2 K259-TB   **  AND GENERATE NEW NUMB.       80922330
0F0D 0 1090              SLT     16        GET LOW ORDER 16 BITS           80922340
0F0E 1 4C80 08A6   RNDMX B     I RNDOM     EXIT                            80922350
                         *                                                 80922360
0F10 0 F28C        RNDMB EOR   2 TERM-TB   COMPLEMENT NUMBER               80922370
0F11 0 70FC              B       RNDMX     AND EXIT                        80922380
                         *                                                 80922390
                         *-------------------------------------------------80922400
                         *-------------------------------------------------80922410
                         *#################################################80922420
                         *          ROUTINE TO CHECK FOR LOCK              80922430
                         *          ON ERROR OPTION                        80922440
                         *                                                 80922450
                         **** ROUTINE CALL                                 80922460
                         *                                                 80922470
                         *     BSI   2 CKLK-TB                             80922480
                         *     DC      ADRS TO RETURN TO IF SW IS SET.     80922490
                         *                                                 80922500
                         *                                                 80922510
```



```
                         *#################################################80922520
OF12 1 4C18 0F1C   CKLKE BZ      CKLK2     DON'T CK IF A REG. ZERO         80922530
OF14 1 C480 0897         LD    I CKLK      GET LOCK ADRS                   80922540
OF16 0 D004              STO     CKLK1+1   SET AS RETURN                   80922550
OF17 0 18D0              RTE     16        SET IN Q                        80922560
OF18 0 C283              LD    2 SW0-TB    GET SW FNC 0                    80922570
OF19 0 108C              SLT     12        CK FOR LOCK ON ERROR            80922580
OF1A 0 4C28 0000   CKLK1 BN    L *-*       BRANCH IF ON                    80922590
OF1C 1 7401 0897   CKLK2 MDX   L CKLK,1    INCR RETURN                     80922600
OF1E 1 4C80 0897         BSC   I CKLK      EXIT SUB-ROUTINE                80922610
                         *-------------------------------------------------80922620
                         *-------------------------------------------------80922630
OF20 1 4C18 0F26   CKPRE BZ      CKPRA     DON'T TEST IF ZERO              80922640
OF22 0 C283              LD    2 SW0-TB    GET FNC SW 00                   80922650
OF23 0 100A              SLA     10        BIT 10                          80922660
OF24 1 4C90 089A         BNN   I CKPRT     EXIT IF NOT SET                 80922670
OF26 1 7401 089A   CKPRA MDX   L CKPRT,1    BUMP RETURN                     80922680
OF28 1 4C80 089A         B     I CKPRT     EXIT                            80922690
                         *#################################################80922700
                         *                                                 80922710
                         *          SUB-ROUTINE SETV                       80922720
                         *                                                 80922730
                         *#################################################80922740
                         *                                                 80922750
                         **** ROUTINE CALL                                 80922760
                         *                                                 80922770
                         *     (A)=WORD TO BE PRESET IN I/O AREA           80922780
                         *     BSI   2 SETV-TB                             80922790
                         *-------------------------------------------------80922800
                         *                                                 80922810
OF2A 1 6780 08C4   SETVE LDX   I3 COMA     GET NO. WORDS TO BE READ        80922820
OF2C 0 7301              MDX   3 1         INCR BY ONE                     80922830
OF2D 1 D700 08C5   SETVA STO   L3 COMA&1    STORE WORD IN I/O AREA         80922840
OF2F 0 73FF              MDX   3 -1        DECR COUNT                      80922850
OF30 0 70FC              B       SETVA     LOOP                            80922860
OF31 1 4C80 08A9         B     I SETV      EXIT                            80922870
                         *-------------------------------------------------80922880
                         *-------------------------------------------------80922890
                         *#################################################80922900
                         *                                                 80922910
                         *     PRINT SUMMARY TABLE                         80922920
                         *                                                 80922930
                         **** ROUTINE CALL                                 80922940
                         *     BSI   2 TEXIT-TB                            80922950
                         *                                                 80922960
                         ****ALTERNATE CALL                                80922970
                         *     BSC   L DFTXT                               80922980
                         *                                                 80922990
                         *     THIS ROUTINE WILL PRINT THE SUMMARY TABLE   80923000
                         *     AND SET SW 15 IN FUNCTION ZERO.             80923010
                         *#################################################80923020
                         *                                                 80923030
                         *                                                 80923040
                         *     TERMINATE DFT                               80923050
                         *                                                 80923060
0F33 0 C283        DFTXT LD      2 SW0-TB    FUNCTION 00                   80923070
0F34 0 EAE1              OR      2 K1-TB     SET BIT 15 TO TERMINATE       80923080
0F35 0 D283              STO     2 SW0-TB    *  DFT PROGRAM                80923090
0F36 0 4230              BSI     2 STMSG-TB  TERMINATE DFT                 80923100
0F37 0 5A04              DC        /5A04     MESSAGE ID                    80923110
0F38 1 7401 086B   PRSUM MDX   L   PSSCT,1   INCR PASS COUNT               80923120
0F3A 0 6500 1D01         LDX   L1  /1D01     FORM #/MID                    23130
0F3C 0 6921              STX     1 ID        SET FOR CALL                  23140
0F3D 0 6103              LDX     1 3         SET LINE COUNT                80923150
0F3E 1 6700 086C         LDX   L3  SKCNT     SET ADDRESS SUMRY TABLE       23160
0F40 0 4013        PRLN1 BSI       PRSM1     PRINT ONE LINE                23180
0F41 0 7303              MDX     3 3         INCR ADRS POINTER             80923190
0F42 0 71FF              MDX     1 -1        DECR LINE COUNT               80923200
```

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0F43 0 70FC              MDX     PRLN1      LOOP-PRINT 3 LINES          80923210
0F44 0 6500 3D81         LDX   L1 /3D01+/80 FORM #/MESSAGE ID             23211
0F46 0 6917              STX    1 ID        SET FOR CALL                 23220
0F47 0 400C              BSI     PRSM1      PRINT ONE LINE               23230
0F48 0 6500 6D81         LDX   L1 /6D01+/80 FORM #/MSG ID
0F4A 0 6913              STX    1 ID        SET FOR CALL
0F4B 0 6103              LDX    1 3         SET LINE COUNTER             80923240
0F4C 0 7301              MDX    3 1         SET ADRS POINTER             80923250
0F4D 0 4006       PRLN3  BSI     PRSM1      PRINT ONE LINE                 23270
0F4E 0 7302              MDX    3 2         INCR ADRS POINTER            80923280
0F4F 0 71FF              MDX    1 -1        DECR LINE COUNTER            80923290
0F50 0 70FC              MDX     PRLN3      LOOP-PRINT 3 LINES           80923300
0F51 0 422D              BSI    2 STMLS-TB  EXIT TO MONITOR              80923310
0F52 2 4C80 012E         BSC   I END        TERMINATE DFT                80923320
0F54 0 0000       PRSM1  DC      *-*        SUBRTN ENTRY PT
0F55 0 C2EC              LD     2 PSSCT-TB  GET PASS COUNT               80923380
0F56 0 D2D3              STO    2 MOD3-TB   SET IN MSG                   80923390
0F57 0 C300              LD     3 0         GET MODIFIER WORD            80923400
0F58 0 D2D4              STO    2 MOD4-TB   SET IN MSG                   80923410
0F59 0 C301              LD     3 1         GET MODIFIER                 80923420
0F5A 0 D2D5              STO    2 MOD5-TB   SET IN MSG                   80923430
0F5B 0 C302              LD     3 2         GET MODIFIER                 80923440
0F5C 0 D2D6              STO    2 MOD6-TB   SET IN MSG                   80923450
0F5D 0 4230              BSI    2 STMSG-TB  CALL PRINT ROUTINE             23460
0F5E 0 0000       ID     DC      *-*        FORM/MSG ID                  80923470
0F5F 0 C0FE              LD      ID         GET MSG ID
0F60 0 EAC6              OR     2 H0080-TB  DON'T PRINT PID,MID
0F61 0 D0FC              STO     ID         PUT IT BACK
0F62 1 4C80 0F54         BSC   I PRSM1      EXIT FROM RTN
                  *=============================================== 80923540
                  *                                               80923550
                  *          INCREMENT AN ENTRY IN THE SUMMARY.   80923560
                  *                                               80923570
                  *=============================================== 80923580
                  *          IX 1 IS THE POSITION IN THE SUMMARY  80923590
                  *          TABLE TO BE INCREMENTED.  IF THE     80923600
                  *          COUNT EXCEEDS 9999, THE COUNTER IS   80923610
                  *          RESET TO ZERO SO THAT A MODULO 10,000 80923620
                  *          IS SIMULATED.  THIS IS TO RELIEVE    80923630
                  *          PRINTOUT PROBLEMS.                   80923640
                  *                                               80923650
0F64 1 C700 086A  COUNE LD    L3 SUMRY    GET PROPER COUNTER           80923660
0F66 0 82E1             A      2 K1-TB    ADD ONE                      80923670
                  *                                               80923680
0F67 1 D700 086A  COUNA STO   L3 SUMRY    STORE                        80923690
0F69 0 92EA             S      2 K10TH-TB SUBTRACT 10,000.  THIS WIL   80923700
                  *                       *  BE MEANINGLESS ON LOOP. 80923710
0F6A 1 4CA0 08A0        BNZ   I  COUNT    EXIT IF NOT 10,000           80923720
0F6C 0 70FA             B        COUNA     ELSE LOOP                    80923730
                  *                                               80923740
                  *---------------------------------------------- 80923750
                  *=============================================== 80923760
                  *                                               80923770
                  *          SUB-ROUTINE STMSG                    80923780
                  *                                               80923790
                  *=============================================== 80923800
                  *                                               80923810
                  *              COMMON MESSAGE SETUP RTN         80923820
                  *                                               80923830
                  *          THIS ROUTINE WILL BUILD THE          80923840
                  *          MESSAGE DESIRED AND CALL RTN         80923850
                  *          PRINT TO PRINT THE MESSAGE.          80923860
                  *                                               80923870
                  **** ROUTINE CALL                               80923880
                  *                                               80923890
                  *     BSI   2 STMSG-TB                          80923900
                  *     DC      MSG ID                            80923910
                  *     MSG ID = FMMM (WHERE)                     80923920
```



```
                  *              F = FORM NUMBER                  80923930
                  *              MMM = MESSAGE ID                 80923940
                  **          BIT 8 MEANS DON'T PRINT PID MID,ETC.   23941
                  *                                               80923950
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924040
                  * FORM  MOD   MOD   MOD   MOD   MOD   MOD   MOD  * 80924050
                  *  NO.   1     2     3     4     5     6     7   * 80924060
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924070
                  *  0    DSW   FILE# HEX   HEX                    * 80924080
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924090
                  *  1    DSW   FILE# DEC   DEC   DEC   DEC        * 80924100
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924110
                  *  2    DSW   FILE# DEC   DEC   DEC              * 80924120
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924130
                  *  3    DSW   FILE# DEC   DEC                    * 80924140
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924150
                  *  4    DSW   FILE# DEC                          * 80924160
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924170
                  *  5    DSW   FILE#                              * 80924180
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924190
                  *  6    DSW   FILE# DEC   HEX   HEX              * 80924200
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924210
                  *  7    DSW   FILE# CYL   CYL   SEC   SEC   REC  * 80924220
                  *                     S/B   WAS   S/B   WAS   LNG  * 80924230
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924240
                  *  8     DSW  FILE# HEX   HEX   HEX   HEX        * 80924250
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924260
                  *  9     DSW  FILE# HEX                          * 80924270
                  *------+-----+-----+-----+-----+-----+-----+-----* 80924280
                  *  A     DSW  FILE# HEX   HEX   HEX              * 80924290
                  *---------------------------------------------- 80924300
                  *                                               80924310
0F6D 0 6964       STMSE STX    1 STMSX+1    SAVE IX 3               80924320
0F6E 0 6B65             STX    3 STMSX&3    SAVE IX 1               80924330
0F6F 1 6580 08AF  STMAD LDX   I1 STMSG      GET CALL ADRS           80924340
0F71 0 C100             LD     1 0          GET PARAMETER WORD        24350
0F72 0 E2C6             AND    2 H0080-TB   SAVE BIT 8                24360
0F73 0 1008             SLA    8            PUT IN BIT 0 POSITION
0F74 0 D2CE             STO    2 MSGO-TB    STORE FOR LOG CALL      80924370
0F75 0 C100             LD     1 0          GET FORM NUMBER         80924380
0F76 0 180C             SRA    12           *                       80924390
0F77 0 D00F             STO     STMSA&1     SAVE                    80924400
0F78 0 C100             LD     1 0          GET MSG ID              80924410
0F79 0 EAC6             OR     2 H0080-TB   SET BIT 8 ON   FOR SURE    24411
0F7A 0 F2C6             EOR    2 H0080-TB   CLEAR BIT 8
0F7B 0 1888             SRT    8            *                       80924420
0F7C 0 1004             SLA    4            *                       80924430
0F7D 0 1088             SLT    8            *                       80924440
0F7E 0 D2D0             STO    2 MSGID-TB   SAVE                    80924450
0F7F 1 7401 08AF        MDX   L  STMSG,1    INCR RETURN             80924460
                  *                                               80924470
0F81 0 C2EB             LD     2 PRSW-TB    GET PRINTER SWITCH      80924480
0F82 1 4C20 0FD1        BNZ     STMSX       EXIT IF SW IS NON-ZERO  80924490
                  *                                               80924500
0F84 0 6301             LDX    3 1          SET CONV CTR            80924510
0F85 0 C2E2             LD     2 K2-TB      GET MOD WD CT           80924520
0F86 0 6500 0000  STMSA LDX   L1 *-*                               80924530
0F88 1 4D80 0F8A        B     I1 FRMTB                              80924540
                  *                                               80924550
                  *                                               80924560
                  *                                               80924600
                  *---------------------------------------------- 80924610
                  *                                               80924620
                  *     FORM TABLE                                80924630
                  *                                               80924640
0F8A 1 0F95       FRMTB DC      FORM0      ADRS OF RTN FORM 0      80924650
0F8B 1 0F97             DC      FORM1                  1           80924660
0F8C 1 0F98             DC      FORM2                  2           80924670
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0F8D 1 0F99              DC      FORM3                    3      80924680
0F8E 1 0F9A              DC      FORM4                    4      80924690
0F8F 1 0F9C              DC      FORM5                    5      80924700
0F90 1 0F9F              DC      FORM6                    6      80924710
0F91 1 0FA2              DC      FORM7                    7      80924720
0F92 1 0FB1              DC      FORM8                    8      80924730
0F93 1 0FB3              DC      FORM9                    9      80924740
0F94 1 0FB2              DC      FORMA                    A      80924750
                       *                                        80924760
                       *                                        80924770
                       *              FORM IS 0                 80924780
                       *                                        80924790
0F95 0 82E2  FORM0 A     2 K2-TB       INCR MOD CNT            80924800
0F96 0 7005        B       FORM5       COMMON ROUTINE          80924810
                       *                                        80924820
                       *              FORM IS 1                 80924830
                       *                                        80924840
0F97 0 82E1  FORM1 A     2 K1-TB       INCR MOD CNT            80924850
                       *                                        80924860
                       *              FORM IS 2                 80924870
                       *                                        80924880
0F98 0 82E1  FORM2 A     2 K1-TB       INCR MOD CNT            80924890
                       *                                        80924900
                       *              FORM IS 3                 80924910
                       *                                        80924920
0F99 0 82E1  FORM3 A     2 K1-TB       INCR MOD CNT            80924930
                       *                                        80924940
                       *              FORM IS 4                 80924950
                       *                                        80924960
0F9A 0 82E1  FORM4 A     2 K1-TB       INCR MOD CNT            80924970
0F9B 0 6306        LDX   3 6           SET CONVERSION CTR      80924980
                       *                                        80924990
                       *              FORM IS 5                 80925000
                       *          COMMON ROUTINE                80925010
                       *                                        80925020
0F9C 0 EACE  FORM5 OR    2 MSGO-TB     SET MSG WORD COUNT      80925030
0F9D 0 D2CE        STO   2 MSGO-TB     *                       80925040
0F9E 0 701B        B       PRINT       PRINT                   80925050
                       *                                        80925060
                       *              FORM IS 6                 80925070
                       *                                        80925080
0F9F 0 82E3  FORM6 A     2 K3-TB       INCR MOD CNTR           80925090
0FA0 0 6302        LDX   3 2           SET CONVERSION CNTR     80925100
0FA1 0 70FA        B       FORM5                               80925110
                       *                                        80925120
                       *              FORM IS 7                 80925130
                       *                                        80925140
0FA2 0 C246  FORM7 LD    2 COMA+1-TB   GET DISK ADRS READ      80925150
0FA3 0 403A        BSI     SECT        FORMAT FOR MSG          80925160
0FA4 0 D2D4        STO   2 MOD4-TB     SET CYL S/B IN MSG      80925170
0FA5 0 18D0        RTE     16          SWAP A AND Q            80925180
0FA6 0 D2D6        STO   2 MOD6-TB     SET SECT S/B IN MSG     80925190
0FA7 0 C206        LD    2 IDS#B-TB    GET DSK ADRS S/B        80925200
0FA8 0 4035        BSI     SECT        FORMAT FOR MSG          80925210
0FA9 0 D2D3        STO   2 MOD3-TB     SET CYL WAS IN MSG      80925220
0FAA 0 18D0        RTE     16          SWAP A AND Q            80925230
0FAB 0 D2D5        STO   2 MOD5-TB     SET SECT WAS IN MSG     80925240
0FAC 0 C200        LD    2 LNGTH-TB    GET RECORD LENGTH       80925250
0FAD 0 403E        BSI     BNDEC       CONVERT TO DECIMAL      80925260
0FAE 0 D2D7        STO   2 MOD7-TB     SET IN MSG              80925270
0FAF 0 C2E5        LD    2 K7-TB       SET MOD CNT             80925280
0FB0 0 70EB        B       FORM5       COMMON ROUTINE          80925290
                       *                                        80925300
                       *              FORM IS 8                 80925310
                       *                                        80925320
0FB1 0 82E1  FORM8 A     2 K1-TB       SET WORD COUNT          80925330
                       *                                        80925340
                       *              FORM IS A                 80925350
```



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                       *                                        80925360
0FB2 0 82E2  FORMA A     2 K2-TB       SET WORD COUNT          80925370
                       *                                        80925380
                       *              FORM IS 9                 80925390
                       *                                        80925400
0FB3 0 82E1  FORM9 A     2 K1-TB       INCR MOD CNT            80925410
0FB4 0 70E7        B       FORM5       COMMON ROUTINE          80925420
                       *---------------------------------------- 80925430
                       *---------------------------------------- 80925440
0FB5 1 C700 0851 MSGC1 LD    L3 FILE#    GET MODIFIER            80925450
0FB7 0 4034        BSI     BNDEC       CONVERT TO DECIMAL      80925460
0FB8 1 D700 0851   STO     L3 FILE#    SET IN MODIFIER         80925470
0FBA 0 73FF  PRINT MDX     3 -1        DECR CONVERSION CTR     80925480
0FBB 0 70F9        MDX     MSGC1       LOOP                    80925490
0FBC 0 C2D0  PRINB LD    2 MSGID-TB    GET MSG ID              80925500
0FBD 0 180D        SRA     13                                  80925510
0FBE 0 F2E5        EOR   2 K7-TB       (NO MESSAGES WITH F)    80925520
0FBF 1 4C18 0FCC   BZ      PRINA       BRANCH FOR ERROR MESSAGE 80925530
0FC1 0 C283        LD    2 SWO-TB      GET SW FNC 0            80925540
0FC2 0 100D        SLA     13          BIT 13-BYPASS ALL LOGS  80925550
0FC3 1 4C28 0FD1   BN      STMSX       EXIT IF SET             80925560
                       *                                        80925570
0FC5 2 4480 012F   BSI   I LOG         MONITOR LOG CALL        80925580
0FC7 1 084D        DC      MSGO        ADRS MSG                80925590
0FC8 1 0FD7        DC      PRBSY       BUSY RETURN             80925600
0FC9 1 0FD1        DC      STMSX       MSG COMPLETE RETURN     80925610
0FCA 2 4C80 012D   BSC   I START       EXIT TO MONITOR         80925620
                       *                                        80925630
0FCC 2 4480 0130 PRINA BSI   I ERROR    MONITOR ERROR CALL      80925640
0FCE 1 084D        DC      MSGO        ADRS MSG                80925650
0FCF 1 0FD7        DC      PRBSY       BUSY RETURN             80925660
0FD0 1 0FD9        DC      PRLP        LOOP RETURN             80925670
0FD1 0 6500 0000 STMSX LDX   L1 *-*     RESTORE XR 1            80925680
0FD3 0 6700 0000   LDX   L3 *-*        RESTORE XR 3            80925681
0FD5 1 4C80 08AF   B     I STMSG       RETURN TO USER          80925682
                       *                                        80925690
                       *     PRINTER IS BUSY                    80925700
                       *                                        80925710
0FD7 0 422D  PRBSY BSI   2 STMLS-TB    EXIT TO MONITOR         80925720
0FD8 0 70E3        B       PRINB       TRY AGAIN               80925730
                       *                                        80925740
                       *     LOOP ON ERROR RETURN               80925750
                       *                                        80925760
0FD9 0 C281  PRLP  LD    2 RID-TB      GET PRESENT ROUTINE NUMBER 80925770
0FDA 1 4C18 0A89   BZ      PRECN       IF ZERO, GO TO PRE-CONTROL 80925780
0FDC 1 4C00 0AF8   B     L CNTLD       ELSE LOOP SAME ROUTINE  80925790
                       *                                        80925800
                       *          ROUTINE TO FORMAT DSK ADRS    80925810
                       *                                        80925820
0FDE 0 0000  SECT  DC      *-*         SUB-ROUTINE ENTRY       80925830
0FDF 0 1883        SRT     3           POSITION                80925840
0FE0 0 D2D7        STO   2 MOD7-TB     SAVE CYL                80925850
0FE1 0 1010        SLA     16          SET HEAD IN CHAR 3      80925860
0FE2 0 1081        SLT     1           * AND SEC IN CHAR 4     80925870
0FE3 0 1002        SLA     2           *                       80925880
0FE4 0 1082        SLT     2           *                       80925890
0FE5 0 D2D8        STO   2 BNTMP-TB    SAVE HD/SECT            80925900
0FE6 0 C2D7        LD    2 MOD7-TB     GET CYL                 80925910
0FE7 0 4004        BSI     BNDEC       CONVERT TO DEC          80925920
0FE8 0 D2D7        STO   2 MOD7-TB     STORE                   80925930
0FE9 0 CAD7        LDD   2 MOD7-TB     PUT HD/SECT IN Q        80925940
0FEA 1 4C80 0FDE   BSC   I SECT        EXIT SUB-ROUTINE        80925950
                       *---------------------------------------- 80925960
                       *                                        80925970
                       *     CONVERT A POSITIVE NUMBER IN THE   80925980
                       *     RANGE FROM 0-9999 TO IT'S DECI-    80925990
                       *     MAL EQUIVALENT.                    80926000
                       *                                        80926010
```

```
                        *
                        *       ENTER ROUTINE WITH THE NUMBER                    80926020
                        *       IN THE A REGISTER.  EXIT WITH                    80926030
                        *       THE CONVERTED NUMBER IN THE A REG.               80926040
                        *                                                        80926050
OFEC 0 0000             BNDEC DC      *-*       ENTRY POINT                      80926060
OFED 1 4CA8 OFEC              BN    I BNDEC     EXIT IF NEGATIVE                 80926070
OFEF 0 1890                   SRT     16        A TO Q                           80926080
OFF0 0 AA13                   D     2 THOUS-TB  MOST SIGNIFICANT DIGIT             26090
OFF1 0 100C                   SLA     12        POSITION DIGIT                   80926100
OFF2 0 D2CB                   STO   2 SNXIO-TB  SAVE                             80926110
OFF3 0 1004                   SLA     4         CLEAR A REG                      80926120
OFF4 0 AA12                   D     2 HUNDR-TB                                   26130
OFF5 0 1008                   SLA     8         POSITION                         80926140
OFF6 0 EACB                   OR    2 SNXIO-TB  COMBINE IN HEX WORD              80926150
OFF7 0 D2CB                   STO   2 SNXIO-TB  SAVE                             80926160
OFF8 0 1008                   SLA     8         CLEAR A                          80926170
OFF9 0 AA11                   D     2 TEN-TB                                     26180
OFFA 0 108C                   SLT     12        COMBINE LAST TWO DIGITS          80926190
OFFB 0 180C                   SRA     12        *                                80926200
OFFC 0 1084                   SLT     4         *                                80926210
OFFD 0 EACB                   OR    2 SNXIO-TB  COMBINE IN HEX WORD              80926220
OFFE 1 4C80 OFEC              BSC   I BNDEC     EXIT WITH WORD IN A REG.         80926230
                        *-------------------------------------------------       80926280
                        *-------------------------------------------------       80926290
                        *
OFFF 0                  PEND  EQU     *-1       LAST PROGRAM ADDRESS               26299
                        *                                                          26300
1000   0822                   END     BEG       INITIAL XFER ADDRESS             80926310
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY                                     80926320
```



```
ADCMA   0894  0DD7 0EC3
ADDEF   0893  0A4C
ADDIF   0895  0A55
ADZIP   0896  0A56
AVG     0C38  0C52 0C70 0C72 0C96
BADCY   081F  0AD8 0D12
BDCYL   0A30  0D80 0D85 0D87 0D90 0DA9 0DAC
BEG     0822  1000
BEGIN   012C  0822
BNDEC   0FEC  0FAD 0FB7 0FE7 0FED 0FFE
BNTMP   0857  0FE5
CKLK    0897  0BC3 0BC9 0C1C 0C2C 0C45 0C4B 0C92 0D54 0D64 0DBD 0E01 0E24 0EEA
              0EFD 0F14 0F1C 0F1E
CKLKE   0F12  0898
CKLK1   0F1A  0F16
CKLK2   0F1C  0F12
CKPRA   0F26  0F20
CKPRE   0F20  089B
CKPRT   089A  0BDE 0CA2 0E19 0E54 0E62 0E7E 0E8C 0EAD 0F24 0F26 0F28
CKRD1   0CC0  0CCD
CKRD3   0CC9  0CCC
CMN1    0B94  0B9F
CMN2    0B92  0BA1
CMN3    0B9D  0BA4
CMP     0E34  0DFA 0E1D 0E6A 0E6C
CMPB    0E6E  0E41 0E73 0E88 0E9B 0E9F 0EA5
CMPB1   0E80  0E92
CMPB2   0E8B  0E7C
CMPB3   0E95  0E85
CMPB4   0E97  0E83 0E94
CMPB5   0E99  0E8A
CMPB6   0E9F  0E7F
CMPEX   0E6C  0E68
CMPTM   088C  0DE8 0E3D 0E42
CMPX    0E67  0E5F
CMP1    0E45  0E4D
CMP2    0E49  0E44 0EAA
CMP2A   0E90  0E8D
CMP3    0E58  0E3B 0E51 0E55
CMP4    0E66  0E63
CMRND   0EA1  0E46
CMRN1   0EA4  0E48
CMRTB   0BBD  0BB6 0BBC
CMRTC   0BBF  0BAB
CMRTF   0BC8  0BC1
CMRTL   0BB3  0BC4 0BC6 0BCA
CMRT2   0BA9  0B99
CNTA    087C  0D33 0D66
CNTB    085B  0BE9 0BEF 0D34 0D72
CNTL    0AE1  089E 0B3E 0BB2 0BCE 0BEA 0BF4 0BFA 0C33 0C50
CNTLB   0AEE  0AFA
CNTLD   0AF8  0AE6 0FDC
CNTLE   089D  0A73 0B3C 0B58 0B5B 0B68 0B8F 0BC7 0BCB 0BEE 0C2A 0C2E 0C49 0C4D
              0C9A 0D6F
COMA    08C4  0894 0A7E 0AC2 0ACF 0AD6 0ADA 0B1C 0B41 0B42 0B47 0B51 0BB4 0BD3
              0C0B 0C56 0C68 0C76 0CD3 0D38 0D7F 0D9A 0DE5 0E5A 0E5C 0E71 0E75
              0EC9 0ED6 0EF6 0F06 0F2A 0F2D 0FA2
COMPT   0811
COUNA   0F67  0F6C
COUNE   0F64  08A1
COUNT   08A0  0D36 0D59 0D6E 0D76 0DA4 0DB4 0DEE 0E04 0E29 0ECB 0EF4 0F00 0F6A
CYL     0BB1  0BA9
CY000   0815  0D1C
CY001   0816
CY002   0817  0C77
CY003   0818
CY199   0819
CY200   081A
```

```
CY201   081B
CY202   081C
DATA1   0BBB  0BAC
DATA2   0BC0  0BAD
DDEF    0812  0893
DDEFX   083B  0A4E 0A4F 0A51 0CAC 0CB2 0CEE 0CF3
DFTXT   0F33  08B3 0ACB 0AE3
DSKMD   0842  0DD3
DVA     0826  0A5F 0B2B 0B30 0CB3 0CBA
END     012E  0A99 0F52
ENDCM   0A38
EPA     0808
ERCT    0881  0E36 0E4F 0E67 0E79 0E7A
ERROR   0130  0FCC
ERR1    0B25  0B20
ERSK1   085A  0BD0 0BDC 0BE7 0D31 0D50 0D5B 0D63
FILE#   0851  0A52 0A66 0A92 0A93 0FB5 0FB8
FORMA   0FB2  0F94
FORM0   0F95  0F8A
FORM1   0F97  0F8B
FORM2   0F98  0F8C
FORM3   0F99  0F8D
FORM4   0F9A  0F8E
FORM5   0F9C  0F8F 0F96 0FA1 0FB0 0FB4
FORM6   0F9F  0F90
FORM7   0FA2  0F91
FORM8   0FB1  0F92
FORM9   0FB3  0F93
FRMTB   0F8A  0F88
FRNSK   0876  0B83
FRN1    0878  0C25
FRN2    087A
FSTNO   0C30  0C03 0C20 0C6F 0C85
HCEDC   0A88  0AD0
HE5E5   084C  0B9D
HRDRD   0871  0E28
HRDSK   086E  0D6D 0D75 0DB3
HRDWR   0874  0EF3
HUNDR   0891  0FF4
H00A0   088E  0A91
H00B0   088F  0A8F
H0080   0845  0F60 0F72 0F79 0F7A
H1313   083E  0B92 0C57 0C6A
H3000   083D  0CC2 0CD7 0CD8
ID      0F5E  0F3C 0F46 0F4A 0F5F 0F61
IDS#B   0885  0DDC 0E3F 0EC8 0FA7
INCR1   0B7D  0B5D 0B63 0B6E
INCR2   0B7E  0B5F 0B65 0B74
INDEX   0880  0E39 0E49 0E4B 0E58 0E6F 0E82 0E90 0E9A 0EB5
INTR    0827  0831
INTRB   0833  0829
INTSW   0825  0828 082E 0A85 0CBC 0CDE
IPA     0806
K1      0860  0A53 0A62 0AE9 0B2A 0B60 0BE1 0C73 0C78 0C80 0D47 0E38 0E66 0E81
              0E87 0E91 0F34 0F66 0F97 0F98 0F99 0F9A 0FB1 0FB3
K10TH   0869  0CC7 0F69
K2      0861  0E5E 0F85 0F95 0FB2
K202    0866  0ABE
K203    0867  0B1D 0B66
K259    0840  0F0C
K27     0C5C  0C8A 0CA4
K3      0862  0AA5 0AAB 0ACC 0B35 0F9F
K331    0868  0C87
K370    0C62  0C53
K4      0863  0A8C 0ABC
K7      0864  0D7C 0D93 0FAF 0FBE
K8      0865  0D03 0D32 0DBA 0DEF 0ECC
LNGTH   087F  0DE6 0E3A 0E4C 0E99 0FAC
```



```
LOG     012F  0FC5
LPA     0807
LPCNT   0032  0AF3 0B7F 0B98 0CAB
LPRNT   0886  0E37 0E80 0EBA
LRN1    0879  0BF6 0C28
LRN2    087B  0BFB
LRTN    0B0E  0AFF
LSTNO   0C2F  0BFF 0C02 0C06 0C09 0C10 0C27
MASK    083F  0AB3
MATO    0134
MLSCF   0809  082C 0A57 0A74 0CF9
MODEL   088D  0A8D 0ABB 0B0E 0B17 0D3A
MOD3    0852  0AB2 0B52 0BE8 0CBF 0D4B 0D51 0D6A 0D99 0DAB 0DC4 0DFD 0E11 0E23
              0E50 0EB8 0EF0 0EFA 0F56 0FA9
MOD4    0853  0EB4 0F58 0FA4
MOD5    0854  0D9C 0DAE 0EB1 0F5A 0FAB
MOD6    0855  0F5C 0FA6
MOD7    0856  0FAE 0FE0 0FE6 0FE8 0FE9
MSGC1   0FB5  0FBB
MSGID   084F  0F7E 0FBC
MSGO    084D  0F74 0F9C 0F9D 0FC7 0FCE
NCYL#   0859  0BD1 0D0F 0D11 0D18 0D1F 0D3D 0D49 0D9E 0DDA
NLOOP   0CAB  0C98
NOCK    087E  0DE2 0DF4 0ED3 0EDF
ONLIN   0810  0A96 0B27 0B3D
PCYL#   0858  0AC4 0D3E 0D69 0D98 0D9D 0DC3 0EC6
PEND    0FFF  080C
PID     07FF  0824
PNTB    0EAB  0E96 0E98 0E9E 0EBE
PNTBX   0EBE  0EAE
PNTC    0EAF  0E78
PRBSY   0FD7  0FC8 0FCF
PRECA   0AA1  0AB0
PRECB   0AAA  0AA6
PRECC   0AA3  0AA9
PRECF   0ADA  0AE0
PRECG   0AD6  0AD1
PRECH   0AB9  0A97 0A9D 0AB4
PRECJ   0AC9  0AC8
PRECN   0A89  0A67 0FDA
PRINA   0FCC  0FBF
PRINB   0FBC  0FD8
PRINT   0FBA  0F9E
PRLN1   0F40  0F43
PRLN3   0F4D  0F50
PRLP    0FD9  0FD0
PRNSK   0877  0B82 0B85 0B87
PRSM1   0F54  0F40 0F47 0F4D 0F62
PRSUM   0F38  0AEC
PRSW    086A  0A78 0BE2 0BE6 0F81
PSSCT   086B  0F38 0F55
RAD     0801  0A58 0A75 0AF2 0AF6
RCKX    0CA8  0C9F 0CA3
RCKX1   0CA6  0CAA
RDCHK   0843  0BD4
RDCMP   085F  0DD6 0DFE 0E0B 0E2E 0E53 0E61 0E8B 0EAC
RDCNT   086F  0DED
RDCPX   0E14  0DEA 0E2D
RDDSW   085E  0DD5 0DFC 0E10 0E16 0E17 0E22
RDEN    0DD3  08A4
RDER1   0E0B  0DFB
RDER2   0E16  0DF8
RDER3   0E22  0E33
RDER4   0E2E  0E1E
RDNCK   0E09  0DF5
RDR2B   0E1D  0E1A
READ    08A3  0AC5 0ACD 0B45 0BBE 0BD5 0C17 0C3B 0C61 0C74 0D7D 0DDD 0DEB 0E07
              0E09
```

```
READA   0DEF   0E02 0E25
READB   0DF1   0E0F 0E21 0E32
READX   0E07   0DFF 0E2B
RELDV   0132   0CF1
REQDV   0131   0CAF
RID     0800   0A77 0AE8 0AEA 0AEE 0AF8 0C21 0FD9
RLDVE   0CEE   08BF
RNDCK   087D   0DE0 0E45
RNDMB   0F10   0F09
RNDME   0F09   08A7
RNDMX   0F0E   0F11
RNDOM   08A6   0B86 0C0D 0EA2 0F0E
RNDSK   081D   0B80
RNDWR   081E   0C00 0C04
RQDV    0CAC   08C2
RTCNT   0888   0D04 0DCF
RTNER   088B   0AF5 0BC2 0BC8 0C1B 0C2B 0C44 0C4A 0C7B 0C8D 0C91 0CA1 0CA5
RTN1    0B0E   0B00 0B3B
RTN1G   0B27   0B18 0B23
RTN1O   0B3A   0B28 0B36
RTN1Q   0B17   0B13
RTN10   0BF8   0B09
RTN11   0C31   0B0A
RTN12   0C4E   0B0B
RTN13   0BA0   0B0C
RTN14   0BA2   0B0D
RTN2    0B3D   0B01
RTN2A   0B51   0B4D
RTN2B   0B59   0B54
RTN2D   0B4F   0B4A
RTN2L   0B40   0B5A
RTN3    0B5C   0B02
RTN3P   0B69   0B61 0B67 0B7B
RTN3Q   0B6D   0B7A
RTN3R   0B71   0B6F 0B73
RTN3S   0B73   0B72
RTN3T   0B77   0B6A 0B6D 0B75
RTN3U   0B79   0B78
RTN4    0B7F   0B03
RTN4A   0B85   0B8C 0B8E
RTN4B   0B87   0B84
RTN4C   0B8B   0B89 0B94 0BA7 0BB5
RTN5    0B90   0B04
RTN6    0B9A   0B05
RTN7    0BA5   0B06
RTN8    0BCC   0B07
RTN8A   0BE3   0BDA 0BE0
RTN8J   0BEF   0BD8
RTN8L   0BD1   0BE4
RTN8M   0BDE   0BF1
RTN8N   0BE1   0BDF
RTN9    0BF2   0B08
RTN9A   0C0B   0C0F
RTN9B   0C16   0C15
RTN9C   0C19   0C0A
RTN9E   0C28   0C1A
RTN9L   0C04   0C1D 0C1F 0C2D
RTRYA   085C   0DF0 0E0D 0E1F 0E2A
RTRYB   085D   0E30
RTTBL   0AFF   0AEB 0AF0 0AF9 0AFF
RT11A   0C3A   0C39
RT11B   0C3F   0C34
RT11C   0C4A   0C3E 0C43
RT11L   0C35   0C46 0C48 0C4C
RT12A   0C68   0C6E
RT12B   0C6F   0C6B
RT12D   0C85   0C79 0C84
RT12F   0C91   0C8B
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```
RT12G   0C8D   0C88
RT12L   0C53   0C95
RT12Z   0C51   0C93
RT910   0BFD   0BF7
R12CK   0C9B   0C5D 0C63 0C7D 0C8E 0CA6 0CA8
S#B     0883   0E3E 0E40 0E43 0EA1 0EA3 0EA4 0EA6 0EA7 0EA8 0EA9 0EB2
SECT    0FDE   0FA3 0FA8 0FEA
SECTD   0C14   0B95 0BA8 0BB8 0BBD 0BFD 0C11 0C16
SEEK    0D30   0D20 0D23 0D2A 0DA7 0DBE
SEEKA   0D37   0D55 0D65 0D68 0D74
SEEKB   0D46   0D41
SEEKC   0D49   0D3B
SEEKD   0D4A   0D45 0D48
SEEKF   0D5B   0D4E
SEEKG   0D70   0D5F
SETV    08A9   0C58 0DF2 0EDB 0F31
SETVA   0F2D   0F30
SETVE   0F2A   08AA
SFTRD   0870   0E03
SFTSK   086D   0D58 0DA3
SFTWR   0873   0EFF
SKCNT   086C   0D35 0F3E
SMLNG   000C   0A3A
SNRES   0844   0A60 0CCE
SNXIO   084A   0A61 0A8A 0AA3 0AAA 0B2E 0CC0 0CD1 0D5D 0FF2 0FF6 0FF7 0FFD
START   012D   0839 0CFA 0FCA
STMAD   0F6F
STML    0D02   0CF8
STMLE   0CF7   08AD
STMLR   0CFC   0CF7 0D02
STMLS   08AC   0CB7 0CC9 0CDD 0CE9 0D00 0F51 0FD7
STMSA   0F86   0F77
STMSE   0F6D   08B0
STMSG   08AF   0837 0A6A 0A94 0AB6 0AD3 0AFC 0B15 0B25 0B38 0B4F 0B56 0BEC 0C5E
               0C64 0C7E 0C8F 0CC5 0CDB 0CE4 0D56 0D61 0D6B 0D70 0DA1 0DB1 0DB6
               0DBF 0DCB 0E05 0E12 0E1B 0E26 0E56 0E64 0E8E 0EBC 0EE7 0EF1 0F01
               0F36 0F5D 0F6F 0F7F 0FD5
STMSX   0FD1   0F6D 0F6E 0F82 0FC3 0FC9
SUMRY   086A   0A3B 0D35 0D58 0D6D 0D75 0DA3 0DB3 0DED 0E03 0E28 0ECA 0EF3 0EFF
               0F64 0F67
SW0     0802   0A3F 0A42 0A70 0AE2 0F18 0F22 0F33 0F35 0FC1
SW1     0803   0AE5
SW2     0804   0A43
SW3     0805
TB      087F   0835 0837 0A3F 0A42 0A43 0A44 0A4C 0A4E 0A51 0A52 0A53 0A55 0A56
               0A57 0A58 0A5B 0A5D 0A5E 0A5F 0A60 0A61 0A62 0A63 0A66 0A68 0A6A
               0A6C 0A6E 0A70 0A73 0A74 0A75 0A77 0A78 0A7C 0A83 0A85 0A8A 0A8B
               0A8C 0A8D 0A8F 0A91 0A92 0A93 0A94 0A96 0AA3 0AA5 0AAA 0AAB 0AB2
               0AB3 0AB6 0AB8 0AB9 0ABB 0ABC 0ABE 0ABF 0AC0 0AC1 0AC2 0AC4 0AC5
               0AC9 0ACC 0ACD 0ACF 0AD3 0AD5 0AE2 0AE5 0AE8 0AE9 0AEA 0AF2 0AF5
               0AF8 0AFC 0AFE 0B0E 0B10 0B11 0B15 0B17 0B1A 0B1C 0B1D 0B1E 0B1F
               0B25 0B27 0B2A 0B2B 0B2C 0B2D 0B2E 0B2F 0B30 0B31 0B32 0B33 0B35
               0B38 0B3C 0B3D 0B40 0B41 0B45 0B49 0B4F 0B51 0B52 0B53 0B56 0B58
               0B5B 0B60 0B66 0B68 0B70 0B76 0B80 0B82 0B83 0B85 0B86 0B87 0B8A
               0B8F 0B92 0B9D 0BAE 0BB0 0BB3 0BB4 0BB9 0BBE 0BC2 0BC3 0BC7 0BC8
               0BC9 0BCB 0BCC 0BD0 0BD1 0BD3 0BD4 0BD5 0BD9 0BDE 0BE1 0BE2 0BE6
               0BE7 0BE8 0BE9 0BEC 0BEE 0BF2 0BF6 0BF8 0BFB 0C00 0C04 0C0D 0C12
               0C17 0C1B 0C1C 0C2A 0C2B 0C2C 0C2E 0C31 0C36 0C3B 0C40 0C44 0C45
               0C49 0C4A 0C4B 0C4D 0C4E 0C56 0C57 0C58 0C5A 0C5E 0C61 0C64 0C6A
               0C73 0C74 0C76 0C77 0C78 0C7B 0C7C 0C7E 0C80 0C81 0C86 0C87 0C8D
               0C8F 0C91 0C92 0C99 0C9A 0C9C 0CA1 0CA2 0CA5 0CAC 0CB7 0CB9 0CBA
               0CBB 0CBC 0CBD 0CBE 0CBF 0CC0 0CC1 0CC2 0CC5 0CC7 0CC8 0CC9 0CCE
               0CCF 0CD0 0CD1 0CD2 0CD3 0CD6 0CD7 0CD8 0CDB 0CDD 0CDE 0CE4 0CE6
               0CE7 0CE8 0CE9 0CEA 0CEB 0CEE 0CF9 0CFC 0D03 0D04 0D05 0D0F 0D11
               0D1F 0D31 0D32 0D33 0D34 0D36 0D37 0D38 0D3A 0D3D 0D3E 0D46 0D47
               0D49 0D4A 0D4B 0D4C 0D50 0D51 0D54 0D56 0D59 0D5D 0D61 0D63 0D64
               0D69 0D6A 0D6B 0D6E 0D6F 0D70 0D76 0D77 0D7C 0D7D 0D7F 0D93 0D98
               0D99 0D9A 0D9C 0D9D 0D9E 0DA1 0DA4 0DAB 0DAE 0DB1 0DB4 0DB5 0DB6
```

```
                0DB9 0DBA 0DBD 0DBF 0DC3 0DC4 0DC6 0DC7 0DCB 0DD3 0DD5 0DD6 0DD7
                0DD8 0DDA 0DDC 0DE0 0DE2 0DE5 0DE6 0DE8 0DEE 0DEF 0DF0 0DF1 0DF2
                0DF3 0DF4 0DF7 0DFC 0DFD 0DFE 0E01 0E04 0E05 0E10 0E11 0E12 0E16
                0E19 0E1B 0E22 0E23 0E24 0E26 0E29 0E2A 0E36 0E37 0E38 0E39 0E3A
                0E3D 0E3E 0E3F 0E40 0E42 0E43 0E45 0E4B 0E4C 0E4F 0E50 0E53 0E54
                0E56 0E5E 0E61 0E62 0E64 0E66 0E67 0E79 0E7E 0E80 0E81 0E82 0E87
                0E8B 0E8C 0E8E 0E90 0E91 0E99 0E9A 0EA1 0EA2 0EA3 0EA4 0EA6 0EA7
                0EA8 0EA9 0EAC 0EAD 0EB1 0EB4 0EBC 0EC0 0EC2 0EC3 0EC4 0EC6 0EC8
                0EC9 0ECB 0ECC 0ECD 0ED3 0ED6 0EDB 0EDE 0EDF 0EE2 0EE7 0EE9 0EEA
                0EEF 0EF0 0EF1 0EF4 0EF5 0EF6 0EF9 0EFA 0EFD 0F00 0F01 0F05 0F06
                0F0B 0F0C 0F10 0F18 0F22 0F33 0F34 0F35 0F36 0F51 0F55 0F56 0F58
                0F5A 0F5C 0F5D 0F60 0F66 0F69 0F72 0F74 0F79 0F7A 0F7E 0F81 0F85
                0F95 0F97 0F98 0F99 0F9A 0F9C 0F9D 0F9F 0FA2 0FA4 0FA6 0FA7 0FA9
                0FAB 0FAC 0FAE 0FAF 0FB1 0FB2 0FB3 0FBC 0FBE 0FC1 0FD7 0FD9 0FE0
                0FE5 0FE6 0FE8 0FE9 0FF0 0FF2 0FF4 0FF6 0FF7 0FF9 0FFD
TBDSW   0850    0834 0A44 0A8B 0B11 0B2F 0B33 0CC1 0CD2 0CD6 0CEB
TEN     0890    0FF9
TERM    080B    0AC1 0B10 0B40 0B53 0BB3 0CB4 0CF4 0D46 0DC6 0DF1 0EF5 0F05 0F0B
                0F10
TEXIT   08B2    0A6C 0AB8 0AD5 0AFE 0CE7 0D77 0DB5
THOUS   0892    0FF0
TMPX    0D78    0D7A 0D7B 0D8F 0D92
TSTCA   0D1C    0D2F
TSTCB   0D21    0D1B
TSTCC   0D24    0D22
TSTCD   0D28    0D25
TSTCE   0D2B    0D29
TSTCF   0D26    0D0B 0D14 0D2C
VERFA   0D11    0D17
VERFB   0D79    0D3F 0D52 0D5A 0DD1
VERFC   0D7A    0D83
VERFD   0D85    0D8D
VERFE   0D8F    0D97
VERFF   0DA8    0DD2
VERFG   0DA9    0DB8
VERFH   0DB6    0DB0
VERFI   0DB9    0D9F
VERFJ   0DCF    0D8A 0D94
VERFX   0DC1    0D06 0DBB
VERFY   08B5    0AC9 0B70 0B76 0B8A 0BB0 0BCC 0BF2 0BF8 0C31 0C4E 0D08 0D0C 0DC9
                0DCD
VRFYE   0D03    08B6
WDCTA   0BBA    0BAA
WRCNT   0872    0ECA
WRERR   088A    0EC2 0EE5 0EE9 0EEF 0EF9
WRITE   08B8    0BB9 0C12 0C36 0C40 0C5A 0C81 0ECE 0EDC 0F03 0F07
WRLNG   0875    0C99
WRMOD   0841    0EC0
WRRTY   0889    0D05 0DA5 0DB9 0ECD 0EEC
WRTA    0EDE    0EEB 0EEE 0EFE
WRTC    0EF9    0EE3
WRTE    0EF7    0ED1
WRTEN   0EC0    08B9
WRTF    0EDC    0ED8
WRTX    0F03    0EFB
WRTX2   0F05    0EE0
XEQ     08BB    0AC0 0B1F 0CEC 0D4C 0DF3 0EDE
XEQB    0CCE    0CC3
XEQE    0CB9    08BC
XEQLP   0CDD    0CD4 0CD9 0CE3
XEQX    0CE8    0CDF
XSKBK   083C    0AB9 0B1A 0D37
ZBUSY   0CB7    0CB1
ZCNT    0887    0CC8 0CCA 0CCF 0CE1
ZEPA    0A7B    0808 0A86 0A89 0AA0 0AA4 0AAE 0AE1
ZIPA    0A38    0806 0A59
ZIPB    0A5B    0895
ZIPC    0A65    0A64
```



```
ZIPD    0A68    0895 0896
ZIPL    0A3B    0A3E
ZLPA    0A6D    0807 0A39 0A4B 0A4D 0A79
ZLPB    0A76    0A71
ZRLDV   08BE    0A5E 0A83 0CE6 0CE8 0CEF 0CF5
ZRQDA   0CAF    0CB8
ZRQDV   08C1    0A5D 0CAD 0CB5 0CBD
ZSNS    0846    082F 0830 0833 0A63 0B49 0BD9 0C7C 0C86 0C9C 0CEA 0DC7 0DF7 0EE2
ZXIO    0848    0ABF 0B1E 0B2C 0B2D 0B31 0B32 0CB9 0CBB 0CBE 0CD0 0D4A 0DD8 0EC4
END OF ASSEMBLY
```

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TABLE OF CONTENTS

1. PURPOSE

THE 1443 FUNCTION TEST IS DESIGNED TO CHECK THE OPERATING PERFORMANCE OF THE 1443 PRINTER AND TO AID IN ITS PROPER ADJUSTMENT.

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

THIS PROGRAM MUST RUN UNDER CONTROL OF THE DIAGNOSTIC MONITOR. THE DIAGNOSTIC MONITOR PROGRAM USES 2,047 STORAGE WORDS, AND THIS PROGRAM USES 2047 STORAGE WORDS.

2.2 EQUIPMENT PREQUISITES

THE PROGRAM IS DESIGNED FOR USE WITH A 52 CHARACTER TYPE BAR. SEE SAMPLE PRINTOUTS FOR ALL SIZES OF TYPE BARS. A CARRIAGE TAPE WITH ALL CHANNELS PUNCHED EQUALLY SPACED IN NUMERICAL ORDER IS NECESSARY FOR THE CARRIAGE TEST ROUTINE. THE CHANNEL PUNCHES SHOULD BE SPACED FOUR OR MORE LINES APART ON THE CARRIAGE TAPE. ANY SUCH TAPE WILL WORK WELL. SEE TABLE 4 FOR A SUGGESTED CARRIAGE TAPE.

3. OPERATING PROCEDURE

3.1 PROGRAM LOADING

STANDARD LOADING PROCEDURE AS DESCRIBED IN THE DIAGNOSTIC MONITOR USE PROCEDURE.

3.2 PROGRAM OPERATION

STANDARD MONITOR OPERATING PROCEDURES APPLY.
THESE PROCEDURES ARE SUMMARIZED HERE. SEE DM USE PROCEDURE FOR DETAILS.

1. CLEAR STORAGE
2. LOAD DIAGNOSTIC MONITOR
3. SELECT MODE OF EXECUTION
4. SELECT MONITOR CONTROL OPTIONS, IF DESIRED
5. SELECT PROGRAM OPTIONS, IF DESIRED, FROM –

   TABLE 0 PROGRAM CONTROL FUNCTION
   TABLE 1 ROUTINE SELECT FUNCTION
   TABLE 2 DEVICE SELECT FUNCTION

6. INSTRUCT MONITOR TO EXECUTE

TABLE 0 CONTROL FUNCTION
(SEE SECTION 5.2)

SENSE/PROGRAM 0 1 2 3 4 5 6 7
0 0 0 0 1 0 1 0

1. SET FUNCTION 00 IN SENSE/PROGRAM SWITCHES 0 AND 1.
2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7.
3. SET DESIRED CONTROL OPTIONS IN DATA ENTRY SWITCHES 0-15.
4. PRESS CONSOLE INTERRUPT.

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
. 1.....	FORCE LOG OF STATUS MESSAGES
1.....	SINGLE CYCLE

TABLE 1 ROUTINE SELECT FUNCTION
(SEE SECTION 5.3)

SENSE/PROGRAM 0 1 2 3 4 5 6 7
0 1 0 0 1 0 1 0

1. SET FUNCTION 01 IN SENSE/PROGRAM SWITCHES 0 AND 1.
2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7.
3. SET DESIRED ROUTINE IN DATA ENTRY SWITCHES 11-15.
4. PRESS CONSOLE INTERRUPT.

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION	
1..	READY – NOT BUSY	RTN 1
1 0..	CONTINUITY	RTN 2
1 1..	CARRIAGE BUSY – NOT BUSY	RTN 3
1 0 0..	BIT LINE CHECK	RTN 4
1 0 1..	PARITY CHECK	RTN 5
1 1 0..	CYCLE STEAL PICKUP	RTN 6
1 1 1..	CYCLE STEAL DROP	RTN 7
1 0 0 0..	WORST CASE CORE A	RTN 8
1 0 0 1..	WORST CASE CORE B	RTN 9
1 0 1 0..	CHARACTER COMPLIMENT	RTN10
1 0 1 1..	REGISTRATION	RTN11
1 1 0 0..	STRESS TEST	RTN12
1 1 0 1..	CARRIAGE IMMEDIATE SPACE	RTN13
1 1 1 0..	CARRIAGE SPACE AFTER PRINTING	RTN14
1 1 1 1..	CARRIAGE IMMEDIATE SKIP	RTN15
0 0 0 0..	CARRIAGE SKIP AFTER PRINTING	RTN16

TABLE 2 DEVICE SELECT FUNCTION

SENSE/PROGRAM 0 1 2 3 4 5 6 7	
1 0 0 0 1 0 1 0	1. SET FUNCTION 10 IN SENSE/PROGRAM SWITCHES 0 AND 1. 2. SET PID IN SENSE/PROGRAM SWITCHES 2 THROUGH 7. 3. SET DESIRED DEVICE NUMBER IN DATA ENTRY SWITCHES 0-15. 4. PRESS CONSOLE INTERRUPT. SEE SECTION 5.4

DATA ENTRY SWITCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	DESCRIPTION
0	TEST 1443 NUMBER ONE.
1	TEST 1443 NUMBER TWO.

3.3 PROGRAM HALTS

THIS PROGRAM HAS NO HALTS.

3.4 PROGRAM TERMINATION

A. STANDARD MONITOR TERMINATION
B. PROGRAM WILL TERMINATE AFTER ONE COMPLETE PASS.

4. PRINTOUTS

4.1 STATUS MESSAGES

STATUS MESSAGES ARE RECEIVED ONLY WHEN FORCE LOG OPTION IS USED.
ALL STATUS MESSAGES ARE PRINTED IN ORDER OF OCCURANCE.

PID MID RID RAD DSW

0A00 A001 000X XXXX XXXX
PRINTER READY-CARRIAGE NOT BUSY STATUS

0A00 A002 000X XXXX XXXX
PRINTER READY STATUS

0A00 A003 000X XXXX XXXX
CARRIAGE NOT BUSY STATUS

0A00 A004 000X XXXX XXXX
CARRIAGE BUSY-PRINTER BUSY, NOT READY STATUS

0A00 A005 000X XXXX XXXX
PRINTER BUSY, NOT READY STATUS

0A00 A006 000X XXXX XXXX
CARRIAGE BUSY STATUS

0A00 A007 000X XXXX XXXX
CARRIAGE CHANNEL STATUS

0A00 A008 0005 XXXX XXXX
OP COMPLETE PRINTER ERROR STATUS

CA00 A009 000X XXXX XXXX
TRANSFER COMPLETE STATUS

0A00 A00A 000X XXXX XXXX
OP COMPLETE STATUS

0A00 A00B 0002 XXXX XXXX
DSW AFTER WORD COUNT ZERO INITIALIZE WRITE.

4.2 ERROR MESSAGES

ERROR MESSAGES INDICATE THE ACTUAL DSW AND WHAT THE DSW SHOULD HAVE BEEN. THESE ARE THE LAST TWO WORDS OF THE ERROR PRINTOUTS.

IF MORE THAN ONE ERROR IS DETECTED PER LINE OF OUTPUT, THE ERRORS PRINTED ARE NOT NECESSARILY IN THE ORDER THEY WERE DETECTED.

PID MID RID RAD DSW DSW SHOULD HAVE BEEN

0A00 E001 000X XXXX XXXX XXXX
ERROR ON CHECKING PRINTER READY,CARRIAGE NOT BUSY

0A00 E002 000X XXXX XXXX XXXX
ERROR ON CHECKING PRINTER READY,NOT BUSY

0A00 E003 000X XXXX XXXX XXXX
ERROR ON CHECKING CARRIAGE NOT BUSY

0A00 E004 000X XXXX XXXX XXXX
CARRIAGE BUSY,PRINTER BUSY, NOT READY ERROR

0A00 E005 000X XXXX XXXX XXXX
PRINTER BUSY,NOT READY ERROR

0A00 E006 000X XXXX XXXX XXXX
CARRIAGE BUSY ERROR

0A00 E007 000X XXXX XXXX XXXX
CARRIAGE CHANNEL ERROR

0A00 E008 0005 XXXX XXXX XXXX
OP COMPLETE DSW ERROR (PRINTING BAD PARITY CHARACTERS)

0A00 E009 000X XXXX XXXX XXXX
TRANSFER COMPLETE DSW ERROR

0A00 E00A 000X XXXX XXXX XXXX
OP COMPLETE DSW ERROR

0A00 E00B 0002 XXXX XXXX XXXX
WORD COUNT ZERO TRANSFER COMPLETE DSW ERROR. (THE DSW IMMDEIATELY AFTER THE XIO INITIALIZE WRITE COMMAND)

0A00 E00C 000X XXXX 0000
FALSE INTERRUPT DSW

0A00 E00D 000X XXXX 8000
LOST TRANSFER COMPLETE INTERRUPT

0A00 E00E 000X XXXX 2000
LOST PRINTER COMPLETE INTERRUPT

5. COMMENTS

THE 1443 FUNCTION TEST CONSISTS OF SIXTEEN ROUTINES. IN THE PREFERRED MODE (THAT IS, WHEN NO OPTIONS HAVE BEEN SELECTED), ALL ROUTINES WILL BE RUN IN ORDER.

5.1 THE PREFERRED MODE

WHEN NO OPTIONS ARE SPECIFIED BY THE OPERATOR THE PROGRAM WILL TEST 1443 NUMBER ONE. IF THE OPTIONAL SECOND 1443 IS TO BE TESTED IT MUST BE SELECTED (TABLE 2).

ALL ERRORS DETECTED WILL BE PRINTED IMMEDIATELY AFTER THE LINE WHERE IT WAS DETECTED. THE ERRORS ARE NOT NECESSARILY PRINTED IN THE ORDER DETECTED IF MORE THAN ONE PER LINE IS RECEIVED.

SHOULD THE OPERATOR WISH TO KNOW THE STATUS OF THE DEVICE AT SEVERAL TIMES DURING THE PRINT CYCLE, FORCE LOG OPTION SHOULD BE SPECIFIED. ALL LOG MESSAGES ARE PRINTED IN ORDER OF OCCURANCE.

5.2 CONTROL OPTIONS

A. SINGLE CYCLE

THIS OPTION WILL CAUSE THE 1443 TO TAKE A SINGLE PRINT CYCLE AND THEN HALT IN THE ROUTINE BEING EXECUTED. ALL OTHER PROGRAMS MAY CONTINUE TO RUN. THIS OPTION PROVIDES THE ABILITY TO SINGLE CYCLE THROUGH EACH LINE OF PRINT IN ANY ROUTINE.

B. FORCE LOG

THE FORCE LOG OPTION CAUSES OUTPUT OF THE DEVICE STATUS AFTER EACH LINE OF PRINT. THE DEVICE STATUS IS PRINTED IN THE ORDER DETECTED DURING THE LAST PRINT CYCLE.

5.3 ROUTINE SELECT OPTION

IF OTHER THAN THE BASIC ROUTINES ARE TO BE RUN OR IF A DIFFERENT ORDER OF ROUTINES IS DESIRED, THE OPERATOR MUST SPECIFY THE ROUTINE TO BE RUN AS IN TABLE 1. THE ROUTINE SPECIFIED AT LAST ENTRY WILL BE REPEATED UNTIL THIS OPTION IS CHANGED. WHEN THIS OPTION IS ZEROED THE REST OF THE ROUTINES WILL BE RUN IN SEQUENCE.

5.4 DEVICE SELECT OPTION

THIS OPTION NEED BE SPECIFIED ONLY IF THE SECOND 1443 IS TO BE TESTED. ONLY ONE 1443 IS TESTED AT A TIME. THIS OPTION MUST BE SPECIFIED BEFORE PROGRAM EXECUTION.

5.5 THE ROUTINES

A. ROUTINE 1

THE READY-NOT BUSY ROUTINE ASSURES THAT THE 1443 CAN BE MADE READY AND NOT BUSY THEN PRINTS A BLANK LINE SPACE SUPPRESSED. THE PRINTER SHOULD GO BUSY-NOT READY AND RETURN READY-NOT BUSY WHEN THE PRINTER COMPLETE INTERRUPT IS RECEIVED.

B. ROUTINE 2

THE CONTINUITY ROUTINE CHECKS THE CONTINUITY OF TRANSFER CIRCUITS THIS ROUTINE PRINTS WITH A WORD COUNT OF ZERO. TRANSFER COMPLETE SHOULD BE REQUESTED IMMEDIATELY IF THERE IS CONTINUITY BETWEEN THE PROCESS CONTROLLER AND THE 1443 ATTACHMENT. PRINTER COMPLETE INTERRUPT WILL BE REQUESTED WHEN THE 1443 BUFFER ADDRESS REACHES 197. IF NO PRINTER COMPLETE HAPPENS THE CONTINUITY BETWEEN THE 1443 AND ITS ATTACHMENT MAY BE QUESTIONED.

C. ROUTINE 3

THE CARRIAGE BUSY-NOT BUSY ROUTINE CHECKS THAT THE CARRIAGE BUSY INDICATOR FUNCTIONS PROPERLY. THIS IS ACCOMPLISHED BY ISSUEING SUCCESSIVE SPACE IMMEDIATE CONTROL COMMANDS.

D. ROUTINE 4

THE BIT LINE ROUTINE PRINTS DATA IN ITS SIMPLEST FORM TO CHECK THE CONTINUITY OF THE PRINT CIRCUITS. ONLY SINGLE BIT CHARACTERS ARE PRINTED. THE DATA IS ROTATED THROUGH ALL PRINT POSITIONS.

E. ROUTINE 5

THE PARITY ROUTINE PRINTS SINGLE BIT CHARACTERS HAVING BAD PARITY TO CHECK THE PRINTER ERROR CIRCUITS. ONLY ONE BAD PARITY CHARACTER IS PRINTED PER LINE.

F. ROUTINE 6

THE CYCLE STEAL PICK-UP ROUTINE CHECKS THAT THE NUMBER OF CYCLE STEALS TO THE PRINTER DOES NOT EXCEED THE WORD COUNT. WHEN THE 1443 BUFFER ADDRESS REACHES 197, CYCLE STEALS ARE TERMINATED AND A PRINT CYCLE IS INITIATED. THE TRANSFER COMPLETE INTERRUPT IS A RESULT OF THE WORD COUNT REGISTER GOING TO ZERO. A WORD COUNT OF 98 SHOULD ALLOW THE PRINTER TO OPERATE NORMALLY. IF THE WORD COUNT REG FAILS TO DECREMENT OF AN EXTRA WORD IS SENT TO THE 1443, THE LINE PRINT CYCLE WILL START BEFORE WORD COUNT ZERO AND WILL BE DETECTED BY LOSS OF THE TRANSFER COMPLETE INTERRUPT.

G. ROUTINE 7

THE CYCLE STEAL DROP ROUTINE CHECKS TO SEE THAT NO CYCLE STEALS ARE DROPPED BY SPECIFYING A WORD COUNT OF 99. THIS ROUTINE SHOULD NOT DETECT A TRANSFER COMPLETE INTERRUPT. (SEE ROUTINE 5)

H. ROUTINES 8 AND 9

THE WORST CASE CORE ROUTINES CHECKS THE PRINTER CIRCUITS BY SPECIFYING CORE PATTERNS TO PLACE WORST CASE NOISE ON THE PRINTER CIRCUITRY.

I. ROUTINE 10

THE CHARACTER COMPLIMENT ROUTINE PRINTS EACH CHARACTER IN EVERY PRINT POSITION.

J. ROUTINE 11

THE REGISTRATION TEST PRINTS A FIELD OF I'S SUPERIMPOSED ON A FIELD OF H'S. THIS ROUTINE CAN BE USED AS AN AID IN ADJUSTING THE PRINT MAGNETS.

K. ROUTINE 12

THE STRESS TEST PRINTS THE 52 CHARACTER TYPE BAR IMAGE THUS IMPOSING A WORST CASE STRESS CONDITION ON THE TYPE BAR DRIVE MECHANISM.

L. ROUTINES 13, 14, 15 AND 16

THE CARRIAGE TEST ROUTINES CHECK THE FOUR CARRIAGE FUNCTIONS NOT PREVIOUSLY TESTED. THESE ARE SPACING IMMEDIATELY, SPACING AFTER PRINTING, SKIPPING TO CHANNEL IMMEDIATELY AND SKIPPING TO CHANNEL AFTER PRINTING, RESPECTIVELY. IF THE CHANNEL PUNCHES ARE EQUALLY SPACED AND PUNCHED IN ORDER (1 THROUGH 12) ON THE CARRIAGE TAPE, THEN ALL ROUTINES WILL INDICATE THE PROPER SPACING BY THE ALIGNMENT OF THE SLASH ON THE PRINTOUT. ROUTINE 13 HAS ONE MORE SPACE BETWEEN LINES THAN DOES ROUTINE 14 DUE TO THE NORMAL SPACE AFTER PRINTING.

TABLE 4 A SUGGESTED CARRIAGE TAPE

TAPE COLUMN	CHANNEL PUNCH
1	1
8	2
15	3
22	4
29	5
36	6
43	7
50	8
57	9
64	10
71	11
78	12
85	END OF TAPE

6 APPENDIX

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 NOTATIONM 0-F).
3. THE CHANNEL ASSIGNED TO THIS DEVICE (0-8). IF THIS IS A DPC DEVICE, PUNCH AN "F" IN THE CARD COLUMN.

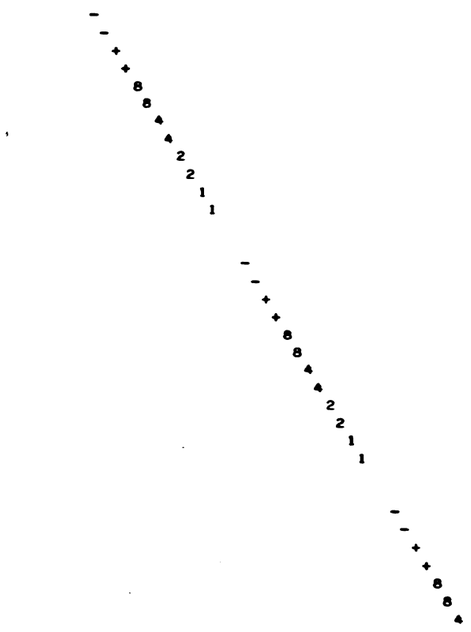
THE LAST EDIT CARD IS THE "END EDIT CARD". THE INFORMATION IN THIS CARD INCLUDES:
1. AN "E" IN COLUMN 1.
2. THE PID FOR THIS PROGRAM (COL. 2-3).
3. A TERMINATOR WORD OF "FFFF" (COL. 7-10).

	PROGRAM ID		CARD SEQUENCE NUMBER		NUMBER OF EDIT ENTRIES	ENTRY 1 1443-1 DDEF: INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL NUMBER	ENTRY 2 1443-2 DDEF: INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL NUMBER	ENTRY 3: NUMBER OF PRINT POSITIONS 78 FOR 120 90 FOR 144 *	
COLUMN	1 2	3 4	5 6	7 8	9 10	11 12	13 14	15 16	17 18	19	20 21	22 23 24 25	26 27 28 29 30
CARD 0	E	0 A	0 0	E D	0 0	0 0	0 3						0 0
END	E	0 A	0 0	F F	F F								

CARD 0 CONTAINS THE DDEF'S FOR THE 1443 PRINTERS. IF THE SYSTEM HAS ONLY ONE 1443, THE DDEF FOR PRINTER NO. 2 SHOULD BE PUNCHED "FFFF".

CARD END IS THE "END EDIT CARD". PUNCH EXACTLY AS IS SHOWN.

* NOTE 1 IF THIS SYSTEM HAS TWO 1443'S AND THEY EACH HAVE A DIFFERENT NUMBER OF PRINT POSITIONS, ENTER 90 IN CARD COLUMS 29-30.



SAMPLE PRINTOUT

NOTE: THIS SAMPLE PRINTOUT ILLUSTRATES A 52 CHARACTER TYPEBAR.

```
BIT LINE
8442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++8844221
442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211
42211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211
2211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211
211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  -
11  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --
1  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --+
  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++
 --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++8
--++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88
-++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++884
++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++8844
+88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442
88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++88442211  --++884422
```

```
PARITY

    -
     -
      +
       +
        8
         8
          4
           4
            2
             2
              1
               1


                  -
                   -
                    +
                     +
                      8
                       8
                        4
                         4
                          2
                           2
                            1
                             1


                                -
                                 -
                                  +
                                   +
                                    8
                                     8
                                      4
```

SAMPLE PRINTOUT (CONT.)

NOTE: THIS SAMPLE PRINTOUT ILLUSTRATES A 52 CHARACTER TYPEBAR.

```
CYCLE STEAL PICK-UP
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0


CYCLE STEAL DROP
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0
 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0

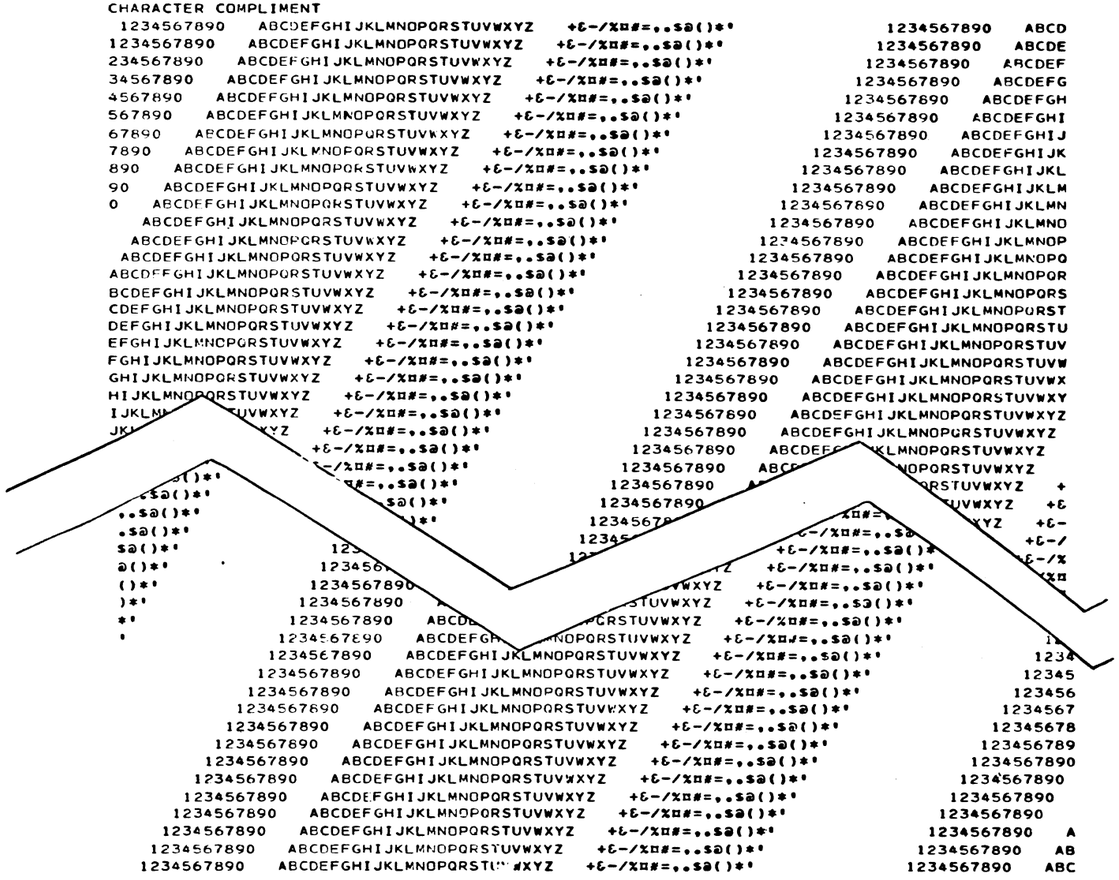

WORST CASE CORE A
##V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV
#V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#
V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#V
##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV
#V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#
V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V
#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V#
VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V##
VV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###
V#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V##V#VVV#VV#V###V


WORST CASE CORE B
HH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777
H7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H
7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H7
HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77
H7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H
7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7
H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7H
777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HH
77H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH
7H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7HH7H777H77H7HHH7
```

SAMPLE PRINTOUT (CONT.)

NOTE: THIS SAMPLE PRINTOUT ILLUSTRATES A 52 CHARACTER TYPEBAR.

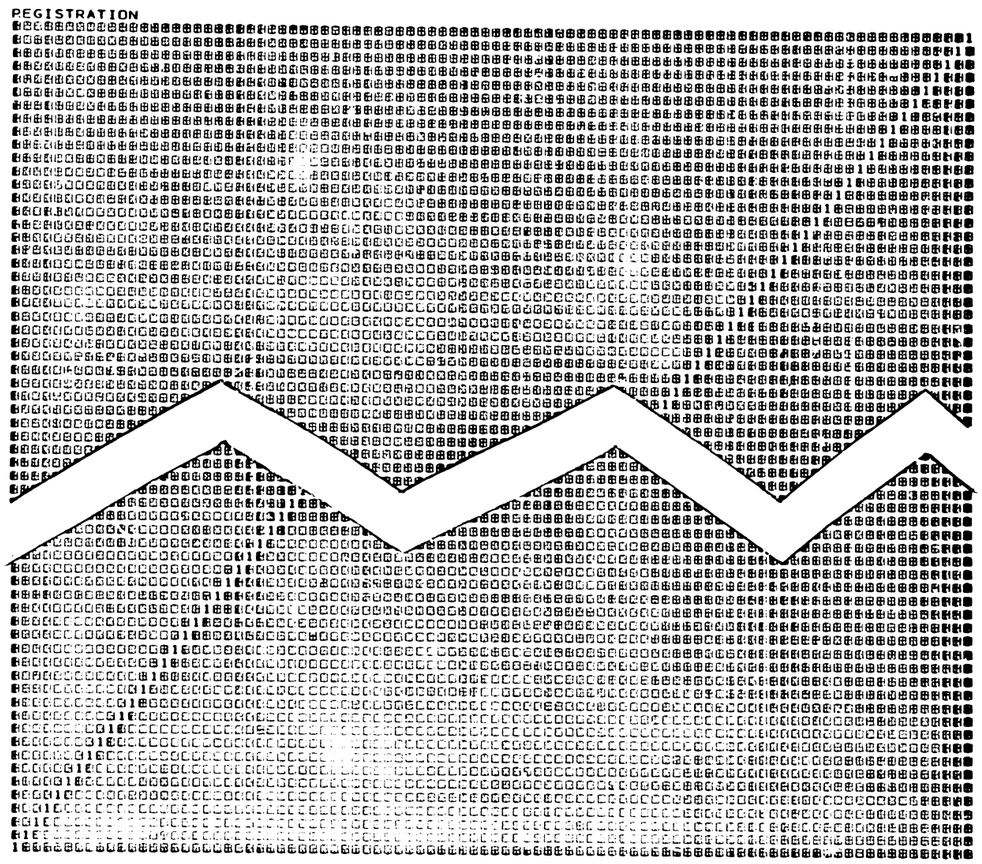
CHARACTER COMPLIMENT



SAMPLE PRINTOUT (CONT.)

NOTE: THIS SAMPLE PRINTOUT ILLUSTRATES A 52 CHARACTER TYPEBAR.

REGISTRATION



SAMPLE PRINTOUT (CONT.)

NOTE: THIS SAMPLE PRINTOUT ILLUSTRATES A 52 CHARACTER TYPEBAR.

```
STRESS
O7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,. @()*' &-1/AJ2SBK3
7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3T
XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TC
GP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL
P8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4
8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4U
YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UD
HQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFC7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM
G9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5
9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5V
ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VE
IR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN
R0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6W
0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2S3K3TCL4UDM5VEN6WF
%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO
¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7
#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7X
=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XG
,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP
.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8
$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8Y
@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YH
()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ
)*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ
*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9
' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9Z
 &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZI
&-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR
-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIRO
1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%
/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤
AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#
J2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=
2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,
SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$
BK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGF8YHQ9ZIR0%¤#=,.$
K3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@
3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@(
TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()
CL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHC9ZIR0%¤#=,.$@()*
L4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*'
4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &
UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-
DM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1
M5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/
5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/A
VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ
EN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2
6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2S
WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SB
FO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK3TCL4UDM5VEN6WFO7XGP8YHQ9ZIR0%¤#=,.$@()*' &-1/AJ2SBK
```


SAMPLE PRINTOUT (CONT.)

NOTE: THIS SAMPLE PRINTOUT ILLUSTRATES A 52 CHARACTER TYPEBAR.

```
SPACE IMMEDIATE

          SPACE    1  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
          SPACE    1  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
          SPACE    1  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

          SPACE    2  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE/

          SPACE    2  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE/

          SPACE    2  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE/


          SPACE    3  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

          SPACE    3  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE/


          SPACE    3  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /


SPACE AFTER PRINT

          SPACE    1  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
          SPACE    1  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
          SPACE    1  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
          SPACE    2  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

          SPACE    2  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

          SPACE    2  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

          SPACE    3  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

          SPACE    3  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE/

          SPACE    3  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
```

1443 FUNCTION TEST
SKIP IMMEDIATE

SAMPLE PRINTOUT (CONT.)

```
CHANNEL  1  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

CHANNEL  2  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

CHANNEL  3  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEF /

CHANNEL  4  EEEEEEEEEEEEEEEEEEEEEE /

CHANNEL  5  EEEEEEEEEEEEEE /

CHANNEL  6  EEEEEE /

CHANNEL  7  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

CHANNEL  8  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

CHANNEL  9  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

CHANNEL 10  EEEEEEEEEEEEEEEEEEEEEE /

CHANNEL 11  EEEEEEEEEEEEEE /

CHANNEL 12  EEEEEE /
```

NOTE: THIS SAMPLE PRINTOUT ILLUSTRATES A 52 CHARACTER TYPEBAR.

1443 FUNCTION TEST
SKIP AFTER PRINT

SAMPLE PRINTOUT (CONT.)

```
CHANNEL  1  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

CHANNEL  2  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

CHANNEL  3  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

CHANNEL  4  EEEEEEEEEEEEEEEEEEEEEE /

CHANNEL  5  EEEEEEEEEEEEEE /

CHANNEL  6  EEEEEE /

CHANNEL  7  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

CHANNEL  8  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

CHANNEL  9  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

CHANNEL 10  EEEEEEEEEEEEEEEEEEEEEE /

CHANNEL 11  EEEEEEEEEEEEEE /

CHANNEL 12  EEEEEE /
```

NOTE: THIS SAMPLE PRINTOUT ILLUSTRATES A 52 CHARACTER TYPEBAR.

```
                         *                                                      80A00020
                         ********************************************         80A00030
012C 0                   BEGIN EQU     300                              *     80A00040
012D 0                   START EQU     BEGIN&1                          *     80A00050
012E 0                   END   EQU     START&1                          *     80A00060
012F 0                   LOG   EQU     END&1                            *     80A00070
0130 0                   ERROR EQU     LOG&1                            *     80A00080
0131 0                   REQDV EQU     ERROR&1                          *     80A00090
0132 0                   RELDV EQU     REQDV&1                          *     80A00100
                         ********************************************         80A00110
                         *                                                *     80A00120
                         *                                                      80A00130
07FF                           ORG     *&2047                                  80A00140
                         *                                                      80A00150
                         *                                                      80A00160
                         *                                                      80A00170
07FF 0 0A00              PID   DC      /0A00       PROGRAM ID                  80A00180
0800 0 0000              RID   DC      0           ROUTINE ID                  80A00190
0801 0 0000              RAD   DC      0           ROUTINE ADDRESS             80A00200
0802 0 0000              SW0   DC      0           CONTROL                     80A00210
0803 0 0000              SW1   DC      0           ROUTINE SELECT              80A00220
0804 0 0000              SW2   DC      0                                       80A00230
0805 0 0000              SW3   DC      0                                       80A00240
0806 1 0894                    DC      AGAIN       INITIALIZATION ADDR         80A00250
0807 1 0894                    DC      AGAIN       LOOP PROGRAM ADDR           80A00260
0808 1 0E2E                    DC      ENDIT       END PROGRAM ADDRESS         80A00270
0809 0 0000              MLSCF DC      /0000       CONTROL FIELD               80A00280
080A 0 FFFF              TERM  DC      /FFFF                                   80A00290
080B 1 0FFD                    DC      PEND        LAST PROGRAM ADDRESS        80A00300
080C 0 0000                    DC      0                                       80A00310
080D 0 0000                    DC      0                                       80A00320
080E 0 0000                    DC      0                                       80A00330
080F 0 0000              ONLIN DC      *-*          ON LINE SWITCH             80A00340
0810 0 0002              COMP  DC      2           COMPATIBILITY SWITCH        80A00350
                         ********************************************         80A00360
                         *                                                      80A00370
                         *                                                      80A00380
                         *                  EDIT INFORMATION                    80A00390
                         *                                                      80A00400
0811 0 FFFF              DDEF1 DC      /FFFF       1443 DEFINITION             80A00410
0812 0 FFFF              DDEF2 DC      /FFFF       1443 DEFINITION             80A00420
0813 0 0078              SIZE  DC      120         PRINTER SIZE                80A00430
0814 0 0034              BAR   DC      52          TYPE BAR SIZE               80A00440
0816   0008                    BSS   E   8                                     80A00450
                         ********************************************         80A00460
                         *                                                      80A00470
                         *                                                      80A00480
                         *                  DATA  TABLES                        80A00490
                         *                                                      80A00500
081E 1 081E              DST   DC      DST                           00        80A00510
081F 0 0000              RPCNT DC      /0000                         1         80A00520
0820 0 0000              CYCNT DC      0           CYCLE COUNTER     02        80A00530
0821 0 0000              WACNT DC      0           WAIT COUNTER      03        80A00540
                         *                                                      80A00550
0822 0 0000              DSW1  DC      0           1443 READY DSW    04        80A00560
0823 0 0000                    DC      0           DSW S/B           05        80A00570
0824 0 0000                    DC      /0000       EXPECTED          06        80A00580
0825 0 E3FF                    DC      /E3FF       MASK              07        80A00590
                         *                                                      80A00600
0826 0 0000              DSW2  DC      0           PRINTER READY DSW 08        80A00610
0827 0 0000                    DC      0           DSW S/B           09        80A00620
0828 0 0000                    DC      /0000       EXPECTED          0A        80A00630
0829 0 E3FB                    DC      /E3FB       MASK              0B        80A00640
                         *                                                      80A00650
082A 0 0000              DSW3  DC      0           CARRIAGE READY DSW 0C       80A00660
082B 0 0000                    DC      0           DSW S/B           0D        80A00670
082C 0 0000                    DC      /0000       EXPECTED          0E        80A00680
082D 0 E3FC                    DC      /E3FC       MASK              0F        80A00690
```



```
                         *                                                      80A00700
082E 0 0000              DSW4  DC      0           1443 BUSY DSW     10        80A00710
082F 0 0000                    DC      0           DSW S/B           11        80A00720
0830 0 0007                    DC      /0007       EXPECTED          12        80A00730
0831 0 E3FF                    DC      /E3FF       MASK              13        80A00740
                         *                                                      80A00750
0832 0 0000              DSW5  DC      0           PRINTER BUSY DSW  14        80A00760
0833 0 0000                    DC      0           DSW S/B           15        80A00770
0834 0 0003                    DC      /0003       EXPECTED          16        80A00780
0835 0 E3FB                    DC      /E3FB       MASK              17        80A00790
                         *                                                      80A00800
0836 0 0000              DSW6  DC      0           CARRIAGE BUSY DSW 18        80A00810
0837 0 0000                    DC      0           DSW S/B           19        80A00820
0838 0 0004                    DC      /0004       EXPECTED          1A        80A00830
0839 0 E3FF                    DC      /E3FF       MASK              1B        80A00840
                         *                                                      80A00850
083A 0 0000              DSW7  DC      0           CARRIAGE STATUS   1C        80A00860
083B 0 0000                    DC      0           DSW S/B           1D        80A00870
083C 0 0000                    DC      /0000       EXPECTED          1E        80A00880
083D 0 FFF8                    DC      /FFF8       MASK              1F        80A00890
                         *                                                      80A00900
083E 0 0000              DSW8  DC      0           PRINTER ERROR DSW 20        80A00910
083F 0 0000                    DC      0           DSW S/B           21        80A00920
0840 0 6001                    DC      /6001       EXPECTED          22        80A00930
0841 0 E3FB                    DC      /E3FB       MASK              23        80A00940
                         *                                                      80A00950
0842 0 0000              DSW9  DC      0           XFER COMPLETE DSW 24        80A00960
0843 0 0000                    DC      0           DSW S/B           25        80A00970
0844 0 8000                    DC      /8000       EXPECTED          26        80A00980
0845 0 A3F8                    DC      /A3F8       MASK              27        80A00990
                         *                                                      80A01000
0846 0 0000              DSWA  DC      0           PTR COMPLETE DSW  28        80A01010
0847 0 0000                    DC      0           DSW S/B           29        80A01020
0848 0 2000                    DC      /2000       EXPECTED          2A        80A01030
0849 0 E3FB                    DC      /E3FB       MASK              2B        80A01040
                         *                                                      80A01050
084A 0 0000              DSWB  DC      0                             2C        80A01060
084B 0 0000                    DC      0           DSW S/B           2D        80A01070
084C 0 8007                    DC      /8007       EXPECTED          2E        80A01080
084D 0 E3FB                    DC      /E3FB       MASK              2F        80A01090
                         *                                                      80A01100
084E 0 0000              DSWC  DC      0           FALSE INTERRUPT   30        80A01110
084F 0 0000                    DC      0           DSW S/B           31        80A01120
0850 0 0000                    DC      0           EXPECTED          32        80A01130
0851 0 0000                    DC      0           MASK              33        80A01140
                         *                                                      80A01150
0852 0 0000              DSWD  DC      0           LOST TRANSFER CMPLT 34      80A01160
0853 0 0000                    DC      0         * INTERRUPT         35        80A01170
0854 0 0000                    DC      0                             36        80A01180
0855 0 0000                    DC      0                             37        80A01190
                         *                                                      80A01200
0856 0 0000              DSWE  DC      0           LOST PRINTER CMPLT 38       80A01210
0857 0 0000                    DC      0         * INTERRUPT         39        80A01220
0858 0 0000                    DC      0                             3A        80A01230
0859 0 0000                    DC      0                             3B        80A01240
                         *                                                      80A01250
085A 0 0000              CNTRL DC      0           CONTROL IOCC      3C        80A01260
085B 0 0400                    DC      /0400                         3D        80A01270
085C 1 0F14              WRITE DC      BITS         INITIALIZE WRITE 3E        80A01280
085D 0 0500                    DC      /0500     * IOCC              3F        80A01290
                         *                                                      80A01300
085E 0 0000              XFDSW DC      0             XFER CMPLT DSW  40        80A01310
085F 0 0700              SENSO DC      /0700       SENSE DSW - NO RESET 41     80A01320
0860 0 0000              PRDSW DC      0           PTR CMPLT DSW     42        80A01330
0861 0 0701              SENSD DC      /0701       SENSE DSW - RESET 43        80A01340
                         *                                                      80A01350
0862 0 0000              SWCMP DC      /0000       SWO COMPARE WORD  44        80A01360
0863 0 0400              K0400 DC      /0400       CONSTANT          45        80A01370
```

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0864 0 0100          K0100 DC    /0100       CONSTANT                46   80A01380
0865 0 0200          K0200 DC    /0200       CONSTANT                47   80A01390
                                                                          80A01400
                     *                                                    80A01410
0866 0 0000          SBANQ DC    0           SAVED ACC AND Q REGS    48   80A01420
0867 0 0000                DC    0                                   49   80A01430
0868 0 0001          ONE   DC    1           CONSTANT                4A   80A01440
0869 0 000F          MASK  DC    /000F       MASK FOR ROUTINES       4B   80A01450
                     *                                                    80A01460
086A 0 001F          BASIC DC    /001F       BASIC ROUTINES          4C   80A01470
086B 0 0010          ALL   DC    LAST-RTABL  NUMBER OF ROUTINES      4D   80A01480
086C 0 0000          KEEP  DC    0           DONT RELEASE 1443       4E   80A01490
086D 0 0101          ONECH DC    /0101       CONSTANT                4F   80A01500
                     *                                                    80A01510
086E 0 000C          K000C DC    /000C       CONSTANT  12            50   80A01520
086F 0 2100          SPAC1 DC    /2100       ONE SPACE               51   80A01530
0870 0 2200          SPAC2 DC    /2200       TWO SPACE               52   80A01540
0871 0 2300          SPAC3 DC    /2300       THREE SPACES            53   80A01550
                     *                                                    80A01560
0872 0 1100          WRSP1 DC    /1100       SPACE AFTER PRINT       54   80A01570
0873 0 3100          WRSK1 DC    /3100       SKIP AFTER PRINT        55   80A01580
0874 0 2100          IMSP1 DC    /2100       IMMEDIATE SPACE         56   80A01590
0875 0 0011          SLASH DC    /0011                               57   80A01600
                     *                                                    80A01610
0876 0 0000          STEP  DC    /0000       SPACING SIZE            58   80A01620
                     ********************************************         80A01630
                     *                                                    80A01640
                     *                                                    80A01650
                     *                                                    80A01660
                     *          INTERRUPT ROUTINE                         80A01670
                     *                                                    80A01680
0877 0 0000          INTSW DC    *-*                                     80A01690
0878 0 0000          DVA   DC    /0000                                   80A01700
                     *                                                    80A01710
0879 0 0000          INTRP DC    /0000                                   80A01720
                     *                                                    80A01730
087A 0 08E6                XIO   SENSD       SENSE DSW - RESET           80A01740
087B 0 1000                NOP                                           80A01750
                     *                                                    80A01760
087C 1 4C10 0886           BSC  L  INTR1,-     BR IF NOT XFER CMPLT        80A01770
087E 0 18D0                RTE     16                                      80A01780
087F 0 C0DE                LD      XFDSW                                   80A01790
0880 0 F0E3                EOR     K0100                                   80A01800
0881 1 4C20 088E           BSC  L  INTRE,Z     BR IF SECOND INTRPT         80A01810
0883 0 18D0                RTE     16                                      80A01820
0884 0 D0D9                STO     XFDSW                                   80A01830
0885 0 700C                MDX     INTRX       EXIT                        80A01840
                     *                                                    80A01850
                     *                                                    80A01860
0886 0 18D0          INTR1 RTE     16                                      80A01870
0887 0 C0D8                LD      PRDSW                                   80A01880
0888 0 F0DB                EOR     K0100                                   80A01890
0889 1 4C20 088E           BSC  L  INTRE,Z     BR IF SECOND INTRPT         80A01900
088B 0 18D0                RTE     16                                      80A01910
088C 0 D0D3                STO     PRDSW       SAVE PTR CMPLT DSW          80A01920
088D 0 7002                MDX     INTRR                                   80A01930
                     *                                                    80A01940
                     *                                                    80A01950
088E 0 18D0          INTRE RTE     16          SAVE ERROR MESSAGE          80A01960
088F 0 D0BE                STO     DSWC                                    80A01970
0890 0 1010          INTRR SLA     16          CLEAR 'A'  REG              80A01980
0891 0 D0E5                STO     INTSW       CLEAR INTERRUPT SWITCH      80A01990
                     *                                                    80A02000
0892 1 4C80 0879     INTRX BSC  I  INTRP       EXIT                        80A02010
                     ********************************************         80A02020
                     *                                                    80A02030
                     *                                                    80A02040
                     *          INITIALIZATION ROUTINE                    80A02050
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                     *                                                    80A02060
0894 0 0000          AGAIN DC    /0000                                   80A02070
0895 0 10A0                SLT     32                                    80A02080
0896 0 6314                LDX   3 20          CLEAR LOG MSG AREA        80A02090
0897 1 DF00 0D72     AGIN1 STD   L3 MSGAR                                80A02100
0899 0 73FE                MDX   3 -2                                    80A02110
089A 0 70FC                MDX     AGIN1                                 80A02120
                     *                                                    80A02130
089B 0 6334                LDX   3 52          CLEAR ERROR AREAS         80A02140
089C 1 DF00 0822     AGIN2 STD   L3 DST&4                                80A02150
089E 0 73FC                MDX   3 -4                                    80A02160
089F 0 70FC                MDX     AGIN2                                 80A02170
08A0 0 D0CB                STO     KEEP                                  80A02180
                     *                                                    80A02190
08A1 1 6600 08BA           LDX   L2 STARX      SET STARTING ADDRESS      80A02200
08A3 1 6E00 0809           STX   L2 MLSCF                                80A02210
                     *                                                    80A02220
08A5 1 D400 0800           STO   L  RID        INITIALIZE RID            80A02230
08A7 1 4C80 0894           BSC   I  AGAIN      EXIT                      80A02240
                     ********************************************         80A02250
                     *                                                    80A02260
                     *                                                    80A02270
                     *                                                    80A02280
                     *          ROUTINE ADDRESS TABLE                     80A02290
                     *                                                    80A02300
08A9 1 090F          RTABL DC    RTZ                                     80A02310
08AA 1 0932                DC    RT01                                    80A02320
08AB 1 0947                DC    RT02                                    80A02330
08AC 1 095B                DC    RT03                                    80A02340
08AD 1 0984                DC    RT04                                    80A02350
08AE 1 09BF                DC    RT05                                    80A02360
08AF 1 09DF                DC    RT06                                    80A02370
08B0 1 0A0D                DC    RT07                                    80A02380
08B1 1 0A1F                DC    RT08                                    80A02390
08B2 1 0A31                DC    RT09                                    80A02400
08B3 1 0A46                DC    RT0A                                    80A02410
08B4 1 0AA7                DC    RT0B                                    80A02420
08B5 1 0ABC                DC    RT0C                                    80A02430
08B6 1 0AF1                DC    RT0D                                    80A02440
08B7 1 0B2E                DC    RT0E                                    80A02450
08B8 1 0B64                DC    RT0F                                    80A02460
08B9 1 08FC          LAST  DC    RTZZZ       END OF PROGRAM              80A02470
                     ********************************************         80A02480
                     *                                                    80A02490
                     *                                                    80A02500
                     *                                                    80A02510
                     *                                                    80A02520
                     *          PROGRAM START ROUTINE                     80A02530
                     *                                                    80A02540
08BA 1 6600 081E     STARX LDX   L2 DST                                  80A02550
08BC 0 C2E6                LD    2 SW2-DST                               80A02560
08BD 0 1002                SLA   2                                       80A02570
08BE 1 4C10 08C6           BSC   L  STAR1,-    BR IF NOT PTR TWO         80A02580
08C0 0 C2F4                LD    2 DDEF2-DST                             80A02590
08C1 1 4C28 08C6           BSC   L  STAR1,&Z   BR IF NO PTR 2 THERE      80A02600
08C3 1 6700 0812           LDX   L3 DDEF2                                80A02610
08C5 0 7007                MDX     STAR2                                 80A02620
                     *                                                    80A02630
08C6 0 C2F3          STAR1 LD    2 DDEF1-DST                             80A02640
08C7 1 4C28 0E3F           BSC   L  DEND,&Z    END IF EDIT ERROR         80A02650
08C9 0 4CA8 012E           BSC   I  END,&Z     END IF NOT THERE          80A02660
08CB 1 6700 0811           LDX   L3 DDEF1                                80A02670
                     *                                                    80A02680
08CD 1 6F00 0E10     STAR2 STX   L3 GETAD                                80A02690
08CF 1 6F00 0DFD           STX   L3 DRAD                                 80A02700
08D1 1 6F00 0E3B           STX   L3 ENDAD                                80A02710
                     *                                                    80A02720
                     *                                                    80A02730
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08D3 1 4400 0E06          BSI  L  GETDE      REQUEST USE OF 1443      80A02740
08D5 0 C245               LD    2 K0400-DST                           80A02750
08D6 0 EA5A               OR    2 DVA-DST                             80A02760
08D7 0 D23D               STO   2 CNTRL&1-DST     CONTROL IOCC        80A02770
08D8 0 EA46               OR    2 K0100-DST                           80A02780
08D9 0 D23F               STO   2 WRITE&1-DST     WRITE IOCC          80A02790
08DA 0 EA47               OR    2 K0200-DST                           80A02800
08DB 0 D241               STO   2 SENSO-DST  SENSE - NO RESET         80A02810
08DC 0 824A               A     2 ONE-DST                             80A02820
08DD 0 D243               STO   2 SENSD-DST  SENSE - RESET IOCC       80A02830
08DE 1 4400 0DF3          BSI  L  DROPD      RELEASE DEVICE           80A02840
                     ********************************************     80A02850
                     *                                              80A02860
                     *                                              80A02870
                     *                                              80A02880
                     *                PRINTER ROUTINE CONTROLLER    80A02890
                     *                                              80A02900
08E0 1 6600 081E     PCON LDX  L2 DST                               80A02910
08E2 1 6500 0D74          LDX  L1 MSGAR&2    RESET LOG AREA          80A02920
08E4 1 6D00 0D61          STX  L1 QLOG1&1                            80A02930
08E6 0 610A               LDX   1 10         SET CYCLE COUNTER       80A02940
08E7 1 6D00 0820          STX  L1 CYCNT                              80A02950
                     *                                              80A02960
08E9 0 C2E5               LD    2 SW1-DST    ASSURE PROPER ENTRY     80A02970
08EA 0 D244               STO   2 SWCMP-DST                          80A02980
08EB 0 E24C               AND   2 BASIC-DST                          80A02990
                     *                                              80A03000
08EC 0 B24D               CMP   2 ALL-DST    CHECK FOR PROPER RTN    80A03010
08ED 0 E248               AND   2 MASK-DST   RTN TOO LARGE           80A03020
08EE 0 1000               NOP                                        80A03030
08EF 0 4820               BSC     Z          SET ROUTINE ID          80A03040
08F0 0 D2E2               STO   2 RID-DST                            80A03050
                     *                                              80A03060
08F1 1 6580 0800          LDX   I1 RID       UPDATE THE RID          80A03070
08F3 0 4818               BSC     &-         INDEX IF NO LOOP        80A03080
08F4 0 7101               MDX   1 1                                  80A03090
                     *                                              80A03100
08F5 1 6D00 0800          STX  L1 RID        SET RTN NO AND ADDR     80A03110
08F7 1 C500 08A8          LD   L1 RTABL-1                            80A03120
08F9 0 D2E3               STO   2 RAD-DST                            80A03130
                     *                                              80A03140
08FA 1 4D80 08A8          BSC   I1 RTABL-1   EXIT TO ROUTINE         80A03150
                     *                                              80A03160
                     *                                              80A03170
08FC 1 4400 0CCC     RTZZZ BSI  L  SEBIT      SET END PROG MESSAGE    80A03180
08FE 0 0014               DC      20                                 80A03190
08FF 1 0E66               DC      BLANK                              80A03200
0900 0 0001               DC      1                                  80A03210
                     *                                              80A03220
0901 1 4400 0CCC          BSI  L  SEBIT      SET END PROG MESSAGE    80A03230
0903 0 FFFA               DC      -6                                 80A03240
0904 1 0E98               DC      EOT                                80A03250
0905 0 0006               DC      6                                  80A03260
                     *                                              80A03270
0906 1 4400 0C7B          BSI  L  HDNG       PRINT END OF TEST       80A03280
                     *                                              80A03290
0908 0 6101               LDX   1 1                                  80A03300
0909 1 4400 0C50          BSI  L  PTRDY      AWAIT READY             80A03310
090B 1 4400 0DF3          BSI  L  DROPD      RELEASE THE 1443        80A03320
                     *                                              80A03330
090D 0 4C80 012E          BSC  I  END        END OF TEST             80A03340
                     ********************************************     80A03350
                     *                                              80A03360
                     *                                              80A03370
                     *                ROUTINE ONE                   80A03380
                     *                                              80A03390
                     *                READY / NOT BUSY              80A03400
                     *                                              80A03410
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                     *                                              80A03420
                     *                THIS ROUTINE PRINTS TEN       80A03430
                     *                 LINES OF NOTHING SPACE       80A03440
                     *                SUPRESSED. IT CHECKS          80A03450
                     *                THAT THE 1443 CAN BE          80A03460
                     *                MADE READY, GOES BUSY         80A03470
                     *                AND NOT READY, ISSUES         80A03480
                     *                A PRINT COMPLETE              80A03490
                     *                INTERRUPT AND RETURNS         80A03500
                     *                TO READY.                     80A03510
                     *                                              80A03520
090F 0 6500 0090     RTZ  LDX  L1 144        CLEAR OUTPUT AREA      80A03530
0911 0 1010               SLA    16                                  80A03540
0912 1 D500 0F14     RTZ1 STO  L1 BITS                              80A03550
0914 0 71FF               MDX   1 -1                                 80A03560
0915 0 70FC               MDX     RTZ1                               80A03570
                     *                                              80A03580
0916 0 6500 0048          LDX  L1 72         SET WORD COUNT          80A03590
0918 1 6D00 0F14          STX  L1 BITS                               80A03600
                     *                                              80A03610
091A 0 C24A               LD    2 ONE-DST                            80A03620
091B 0 EA3F               OR    2 WRITE&1-DST   SET SPACE SUPRESS    80A03630
091C 0 D23F               STO   2 WRITE&1-DST                        80A03640
                     *                                              80A03650
091D 0 6101               LDX   1 1                                  80A03660
091E 1 4400 0C50          BSI  L  PTRDY      CHECK PRINTER READY     80A03670
0920 1 4400 0CAC          BSI  L  PRINT      PRINT NOTHING           80A03680
                     *                                              80A03690
0922 0 610A               LDX   1 /A                                 80A03700
0923 1 4400 0D3A          BSI  L  CKPTR      CK PRINTER CMPLT        80A03710
0925 0 C23F               LD    2 WRITE&1-DST                        80A03720
0926 0 1801               SRA     1                                  80A03730
0927 0 1001               SLA     1                                  80A03740
0928 0 D23F               STO   2 WRITE&1-DST                        80A03750
0929 1 4400 0DC2          BSI  L  ERRIT      PRINT ANY ERRORS        80A03760
092B 1 4400 0D93          BSI  L  LOGIT      LOG ANY ERRORS          80A03770
092D 1 74FF 0820          MDX  L  CYCNT,-1   SKIP IF RTN DONE        80A03780
092F 0 70DF               MDX     RTZ                                80A03790
0930 1 4C00 08E0          BSC  L  PCON                               80A03800
                     ********************************************     80A03810
                     *                                              80A03820
                     *                                              80A03830
                     *                ROUTINE TWO                   80A03840
                     *                                              80A03850
                     *                    CONTINUITY                80A03860
                     *                                              80A03870
                     *                THIS ROUTINE PRINTS WITH      80A03880
                     *                 A WORD COUNT OF ZERO.        80A03890
                     *                TRANSFER COMPLETE INTRPT      80A03900
                     *                WILL BE REQUESTED             80A03910
                     *                IMMEDIATELY IF THERE IS       80A03920
                     *                CONTINUITY BETWEEN THE        80A03930
                     *                PC AND THE 1443. PRINTER      80A03940
                     *                COMPLETE INTERRUPT WILL       80A03950
                     *                COME ALONG WHEN THE 1443      80A03960
                     *                BUFFER REACHES ADDRESS        80A03970
                     *                197. IF NO PRINTER            80A03980
                     *                COMPLETE OCCURS THE           80A03990
                     *                CONTINUITY BETWEEN THE        80A04000
                     *                1443 AND THE ATTACHMENT       80A04010
                     *                MAY BE QUESTIONED.            80A04020
                     *                                              80A04030
0932 0 1010          RT01 SLA    16     ZERO WORD COUNT             80A04040
0933 1 D400 0F14          STO  L BITS                                80A04050
0935 0 6102          RT01A LDX   1 2                                80A04060
0936 1 4400 0C50          BSI  L  PTRDY      PRINTER READY           80A04070
0938 0 610B               LDX   1 /B                                 80A04080
                                                                    80A04090
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0939 1 4400 0CAC          BSI  L  PRINT      PRINT ONE LINE                80A04100
093B 0 610A               LDX   1 10                                       80A04110
093C 1 4400 0D3A          BSI  L  CKPTR      CK PRINTER COMPLETE           80A04120
093E 1 4400 0DC2          BSI  L  ERRIT      PRINT ANY ERRORS              80A04130
0940 1 4400 0D93          BSI  L  LOGIT      LOG ANY MESSAGES              80A04140
0942 1 74FF 0820          MDX  L  CYCNT,-1   SKIP IF RTN DONE             80A04150
0944 0 70F0               MDX     RT01A                                    80A04160
0945 1 4C00 08E0          BSC  L  PCON       EXIT TO NEXT ROUTINE          80A04170
                          *                                                80A04180
                          *                                                80A04190
                          ************************************************80A04200
                          *                                                80A04210
                          *                                                80A04220
                          *                                                80A04230
                          *                ROUTINE THREE                   80A04240
                          *                                                80A04250
                          *                     CARRIAGE BUSY              80A04260
                          *                                                80A04270
                          *                THIS ROUTINE CHECKS THAT        80A04280
                          *                 THE CARRIAGE BUSY              80A04290
                          *                 INDICATOR FUNCTIONS            80A04300
                          *                 PROPERLY                       80A04310
                          *                                                80A04320
0947 0 6103               RT02 LDX   1 3                                   80A04330
0948 1 4400 0C50          BSI  L  PTRDY      CK CARRIAGE READY             80A04340
                          *                                                80A04350
094A 0 C251               LD    2 SPAC1-DST  SET TO SINGLE SPACE           80A04360
094B 0 D23C               STO   2 CNTRL-DST                                80A04370
                          *                                                80A04380
094C 0 6104               LDX   1 4                                        80A04390
094D 1 4400 0C95          BSI  L  FORMS      PERFORM SPACING               80A04400
094F 0 610A               LDX   1 10         SET X1 CTRL                   80A04410
0950 1 4400 0D3A          BSI  L  CKPTR      GO CK PRNTR                   80A04420
                          *                                                80A04430
0952 1 4400 0DC2          BSI  L  ERRIT      PRINT ANY ERRORS              80A04440
0954 1 4400 0D93          BSI  L  LOGIT      LOG ANY MESSAGES              80A04450
0956 1 74FF 0820          MDX  L  CYCNT,-1   SKIP IF DONE                  80A04460
0958 0 70EE               MDX     RT02                                     80A04470
0959 1 4C00 08E0          BSC  L  PCON                                     80A04480
                          ************************************************80A04490
                          *                                                80A04500
                          *                                                80A04510
                          *                ROUTINE FOUR                    80A04520
                          *                                                80A04530
                          *                     BIT LINE                   80A04540
                          *                                                80A04550
                          *                THIS ROUTINE CHECKS THE         80A04560
                          *                 ABILITY OF THE 1443 TO         80A04570
                          *                 RECEIVE AND PRINT DATA         80A04580
                          *                 IN ITS SIMPLEST FORM.          80A04590
                          *                 SINGLE BIT CHARACTERS          80A04600
                          *                 ARE ROTATED THROUGH ALL        80A04610
                          *                 PRINT POSITIONS.               80A04620
                          *                                                80A04630
                          *                                                80A04640
095B 1 4400 0CCC          RT03 BSI  L  SEBIT      SET UP HEADING           80A04650
095D 0 0005                    DC      5                                   80A04660
095E 1 0E49                    DC      BLINE                               80A04670
095F 0 0005                    DC      5                                   80A04680
                          *                                                80A04690
0960 1 4400 0C7B               BSI  L  HDNG       PRINT HEADING            80A04700
                          *                                                80A04710
0962 1 4400 0CCC               BSI  L  SEBIT      SET UP ROUTINE DATA       80A04720
0964 0 0090                    DC      144                                 80A04730
0965 1 0E4D                    DC      BILK                                80A04740
0966 0 0007                    DC      7                                   80A04750
                          *                                                80A04760
0967 0 C2F5                    LD    2 SIZE-DST                            80A04770
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0968 0 1801                    SRA     1                                   80A04780
0969 1 D400 0F14               STO  L  BITS                                80A04790
096B 0 630E                    LDX     3 14                                80A04800
096C 1 6F00 0820               STX  L3 CYCNT                               80A04810
096E 1 4400 0CB9          RT03A BSI  L  ROTA       ROTATE OUTPUT CHARS     80A04820
0970 0 6102                    LDX     1 2                                 80A04830
0971 1 4400 0C50               BSI  L  PTRDY      CHECK PRINTER READY       80A04840
0973 1 4400 0CAC               BSI  L  PRINT      PRINT LINE                80A04850
0975 0 6109                    LDX     1 9                                 80A04860
0976 1 4400 0D14               BSI  L  CKXFR      CHECK TRASNFER CMPLT      80A04870
0978 0 610A                    LDX     1 10                                80A04880
0979 1 4400 0D3A               BSI  L  CKPTR      CHECK PRINTER CMPLT       80A04890
097B 1 4400 0DC2               BSI  L  ERRIT      PRINT ANY ERRORS          80A04900
097D 1 4400 0D93               BSI  L  LOGIT      LOG ANY MESSAGES          80A04910
097F 1 74FF 0820               MDX  L  CYCNT,-1   SKIP IF RTN DONE          80A04920
0981 0 70EC                    MDX     RT03A                               80A04930
0982 1 4C00 08E0               BSC  L  PCON       EXIT TO NEXT ROUTINE      80A04940
                          ************************************************80A04950
                          *                                                80A04960
                          *                                                80A04970
                          *                                                80A04980
                          *                ROUTINE FIVE                    80A04990
                          *                                                80A05000
                          *                     PARITY CHECK               80A05010
                          *                                                80A05020
                          *                THIS ROUTINE CHECKS THAT        80A05030
                          *                 THE PRINTER CIRCUITRY          80A05040
                          *                 WILL RESPOND TO BAD            80A05050
                          *                 PARITY CHARACTERS.             80A05060
                          *                                                80A05070
0984 1 4400 0CCC          RT04 BSI  L  SEBIT       SET UP HEADING           80A05080
0986 0 0003                    DC      3                                   80A05090
0987 1 0E54                    DC      PAR                                 80A05100
0988 0 0003                    DC      3                                   80A05110
                          *                                                80A05120
0989 0 1810                    SRA     16         INITIALIZE PARITY        80A05130
098A 0 92EC                    S     2 TERM-DST   * DATA GENERATION         80A05140
098B 0 D009                    STO     BLNCT                               80A05150
                          *                                                80A05160
098C 1 4400 0C7B               BSI  L  HDNG       PRINT RTN HEADING        80A05170
                          *                                                80A05180
098E 0 C2F5                    LD    2 SIZE-DST                            80A05190
098F 0 D202                    STO   2 CYCNT-DST                           80A05200
0990 1 6700 0E58          RT4I3 LDX  L3 PARK                               80A05210
0992 0 6B08                    STX   3 PACNT                               80A05220
                          *                                                80A05230
0993 1 4400 0CCC          SETPA BSI  L  SEBIT                              80A05240
0995 0 0000               BLNCT DC      0 - 120 %WC¤                       80A05250
0996 1 0E66                    DC      BLANK                               80A05260
0997 0 0001                    DC      1                                   80A05270
0998 1 4400 0CCC               BSI  L  SEBIT                               80A05280
099A 0 FFFF                    DC      -1                                  80A05290
099B 0 0000               PACNT DC      0 %PARK¤                           80A05300
099C 0 0001                    DC      1                                   80A05310
                          *                                                80A05320
099D 0 6102                    LDX   1 2                                   80A05330
099E 1 4400 0C50               BSI  L  PTRDY      PRINTER READY            80A05340
09A0 1 4400 0CAC               BSI  L  PRINT      PRINT ONE LINE           80A05350
09A2 0 6109                    LDX   1 9                                   80A05360
09A3 1 4400 0D14               BSI  L  CKXFR      CHECK TRANSFER CMPLT     80A05370
09A5 0 6108                    LDX   1 8                                   80A05380
09A6 1 4400 0D3A               BSI  L  CKPTR      CK PRINTER CMPLT         80A05390
                          *                                                80A05400
09A8 1 4400 0DC2               BSI  L  ERRIT      PRINT ANY ERRORS         80A05410
09AA 1 4400 0D93               BSI  L  LOGIT      GO LOG MESSAGES          80A05420
                          *                                                80A05430
09AC 0 C0EE                    LD      PACNT                               80A05440
09AD 0 92EC                    S     2 TERM-DST                            80A05450
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09AE 0 D0EC            STO     PACNT                                80A05460
09AF 0 100F            SLA     15                                   80A05470
09B0 0 4820            BSC     Z                                    80A05480
09B1 0 70E1            MDX     SETPA                                80A05490
                       *                                            80A05500
09B2 1 74FE 0820       MDX  L  CYCNT,-2   SKIP IF RTN DONE         80A05510
09B4 0 7002            MDX     RT04C                                80A05520
09B5 1 4C00 08E0       BSC  L  PCON       EXIT TO NEXT ROUTINE      80A05530
                       *                                            80A05540
09B7 1 7401 0995 RT04C MDX  L  BLNCT,1                              80A05550
09B9 0 C0E1            LD      PACNT                                80A05560
09BA 0 9003            S       EPARK                                80A05570
09BB 1 4C28 0993       BSC  L  SETPA,&Z                             80A05580
09BD 0 70D2            MDX     RT4I3                                80A05590
                       *                                            80A05600
09BE 1 0E65 EPARK DC   PARK&13                                      80A05610
                       ********************************************** 80A05620
                       *                                            80A05630
                       *                                            80A05640
                       *                                            80A05650
                       *                                            80A05660
                       *                                            80A05670
                       *            ROUTINE SIX                     80A05680
                       *                                            80A05690
                       *                 CYCLE STEAL PICK-UP        80A05700
                       *                                            80A05710
                       *            THIS ROUTINE CHECKS THAT        80A05720
                       *             THE NUMBER OF CYCLE            80A05730
                       *             STEALS TO THE PRINTER          80A05740
                       *             DO NOT EXCEED THE WORD         80A05750
                       *             COUNT. CS@S ARE ENDED          80A05760
                       *             AND THE 1443 TAKES A           80A05770
                       *             PRINT CYCLE WHEN THE           80A05780
                       *             BUFFER ADDRESS REACHES         80A05790
                       *             197.                           80A05800
                       *                                            80A05810
                       *             A WORD COUNT OF 98 WILL        80A05820
                       *             JUST MAKE IT.                  80A05830
                       *                                            80A05840
                       *             IF THE WORD COUNT REG          80A05850
                       *             FAILS TO DECREMENT OR AN       80A05860
                       *             EXTRA WORD IS SENT TO          80A05870
                       *             THE 1443, THE LINE PRINT       80A05880
                       *             CYCLE WILL START BEFORE        80A05890
                       *             WC IS ZERO AND WILL BE         80A05900
                       *             DETECTED BY LOSS OF            80A05910
                       *             TRANSFER COMPLETE.             80A05920
                       *                                            80A05930
09BF 1 4400 0CCC RT05  BSI  L  SEBIT      SET UP HEADING            80A05940
09C1 0 000A            DC      10                                   80A05950
09C2 1 0E67            DC      CSTEL                                80A05960
09C3 0 000A            DC      10                                   80A05970
                       *                                            80A05980
09C4 1 4400 0C7B       BSI  L  HDNG       PRINT RTN HEADING         80A05990
09C6 1 4400 0CCC       BSI  L  SEBIT      SET UP DATA               80A06000
09C8 0 0061            DC      97                                   80A06010
09C9 1 0E73            DC      CSE08                                80A06020
09CA 0 000A            DC      10                                   80A06030
                       *                                            80A06040
09CB 0 6102 RT05A LDX     1 2                                       80A06050
09CC 1 4400 0C50       BSI  L  PTRDY      PRINTER READY             80A06060
09CE 1 4400 0CAC       BSI  L  PRINT      PRINT ONE LINE            80A06070
09D0 0 6109            LDX     1 9                                  80A06080
09D1 1 4400 0D14       BSI  L  CKXFR      CK TRANSFER CMPLT         80A06090
09D3 0 610A            LDX     1 10                                 80A06100
09D4 1 4400 0D3A       BSI  L  CKPTR      CK PRINTER COMPLETE       80A06110
09D6 1 4400 0DC2       BSI  L  ERRIT      PRINT ANY ERRORS          80A06120
09D8 1 4400 0D93       BSI  L  LOGIT      LOG ANY MESSAGES          80A06130
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09DA 1 74FF 0820       MDX  L  CYCNT,-1   SKIP IF RTN DONE         80A06140
09DC 0 70EE            MDX     RT05A                                80A06150
09DD 1 4C00 08E0       BSC  L  PCON       EXIT TO NEXT ROUTINE      80A06160
                       ********************************************** 80A06170
                       *                                            80A06180
                       *                                            80A06190
                       *                                            80A06200
                       *                                            80A06210
                       *            ROUTINE SEVEN                   80A06220
                       *                                            80A06230
                       *                CYCLE STEAL DROP            80A06240
                       *                                            80A06250
                       *            THIS ROUTINE CHECKS THAT        80A06260
                       *             THE WORD COUNT REG IS          80A06270
                       *             NOT DECREMENTED TOO            80A06280
                       *             RAPIDLY.                       80A06290
                       *                                            80A06300
                       *             A WORD COUNT OF 99 IS          80A06310
                       *             SPECIFIED. TRANSFER            80A06320
                       *             COMPLETE IS NOT EXPECTED       80A06330
                       *             AS EXPLAINED IN ROUTINE        80A06340
                       *             FIVE.                          80A06350
                       *                                            80A06360
09DF 1 4400 0CCC RT06  BSI  L  SEBIT      SET UP HEADING            80A06370
09E1 0 0006            DC      6                                    80A06380
09E2 1 0E67            DC      CSTEL                                80A06390
09E3 0 0006            DC      6                                    80A06400
                       *                                            80A06410
09E4 1 4400 0CCC       BSI  L  SEBIT                                80A06420
09E6 0 FFFE            DC      -2                                   80A06430
09E7 1 0E71            DC      DROP                                 80A06440
09E8 0 0002            DC      2                                    80A06450
                       *                                            80A06460
09E9 1 4400 0C7B       BSI  L  HDNG       PRINT RTN HEADING         80A06470
                       *                                            80A06480
09EB 1 4400 0CCC       BSI  L  SEBIT      SET UP DATA               80A06490
09ED 0 0063            DC      99                                   80A06500
09EE 1 0E74            DC      CSE09                                80A06510
09EF 0 000A            DC      10                                   80A06520
                       *                                            80A06530
09F0 0 6102 RT06A LDX     1 2                                       80A06540
09F1 1 4400 0C50       BSI  L  PTRDY      PRINTER READY             80A06550
09F3 1 4400 0CAC       BSI  L  PRINT      PRINT ONE LINE            80A06560
09F5 0 6109            LDX     1 9                                  80A06570
09F6 1 4400 0D14       BSI  L  CKXFR      CK TRANSFER CMPLT         80A06580
09F8 0 CA24            LDD     2 DSW9-DST                           80A06590
09F9 0 4810            BSC     -          SKIP IF ERROR             80A06600
09FA 0 10A0            SLT     32                                   80A06610
09FB 0 D224            STO     2 DSW9-DST                           80A06620
09FC 0 1091            SLT     17                                   80A06630
09FD 0 1801            SRA     1                                    80A06640
09FE 0 D225            STO     2 DSW9&1-DST                         80A06650
09FF 0 10A0            SLT     32                                   80A06660
0A00 0 DA34            STD     2 DSWD-DST                           80A06670
0A01 0 610A            LDX     1 10                                 80A06680
0A02 1 4400 0D3A       BSI  L  CKPTR      CK PRINTER COMPLETE       80A06690
0A04 1 4400 0DC2       BSI  L  ERRIT      PRINT ANY ERRORS          80A06700
0A06 1 4400 0D93       BSI  L  LOGIT      LOG ANY MESSAGES          80A06710
0A08 1 74FF 0820       MDX  L  CYCNT,-1   SKIP IF RTN DONE         80A06720
0A0A 0 70E5            MDX     RT06A                                80A06730
0A0B 1 4C00 08E0       BSC  L  PCON       EXIT TO NEXT ROUTINE      80A06740
                       ********************************************** 80A06750
                       *                                            80A06760
                       *                                            80A06770
                       *                                            80A06780
                       *                                            80A06790
                       *            ROUTINE EIGHT                   80A06800
                       *                                            80A06810
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                        *                       WORST CASE CORE A                                   80A06820
                        *                                                                           80A06830
                        *                     THIS ROUTINE TESTS THE                                80A06840
                        *                      CORE BUFFER BY PRINTING                              80A06850
                        *                      A NOISY PATTERN.                                     80A06860
                        *                                                                           80A06870
0A0D 1 4400 0CCC        RT07  BSI  L  SEBIT     SET UP HEADING                                      80A06880
0A0F 0 0009                   DC      9                                                             80A06890
0A10 1 0E7E                   DC      WCCOR                                                         80A06900
0A11 0 0009                   DC      9                                                             80A06910
                        *                                                                           80A06920
0A12 1 4400 0C7B              BSI  L  HDNG      PRINT RTN HEADING                                   80A06930
                        *                                                                           80A06940
                        *                                                                           80A06950
0A14 1 4400 0CCC              BSI  L  SEBIT     SET UP DATA                                         80A06960
0A16 0 0090                   DC      144                                                           80A06970
0A17 1 0E88                   DC      AWORK                                                         80A06980
0A18 0 0008                   DC      8                                                             80A06990
                        *                                                                           80A07000
0A19 0 C2F5             RT07B LD    2 SIZE-DST                                                    80A07010
0A1A 0 1801                   SRA     1                                                             80A07020
0A1B 1 D400 0F14              STO  L  BITS                                                          80A07030
0A1D 1 4C00 096E              BSC  L  RT03A                                                         80A07040
                        ********************************************                                80A07050
                        *                                                                           80A07060
                        *                                                                           80A07070
                        *                       ROUTINE NINE                                        80A07080
                        *                                                                           80A07090
                        *                       WORST CASE CORE B                                   80A07100
                        *                                                                           80A07110
                        *                     THIS ROUTINE ASSURES                                  80A07120
                        *                      PRINT RELIABILITY BY                                 80A07130
                        *                      PRINTING A SECOND NOISY                              80A07140
                        *                      PATTERN.                                             80A07150
                        *                                                                           80A07160
0A1F 1 4400 0CCC        RT08  BSI  L  SEBIT     SET UP HEADING                                      80A07170
0A21 0 0008             EIGHT DC      8                                                             80A07180
0A22 1 0E7E                   DC      WCCOR                                                         80A07190
0A23 0 0008                   DC      8                                                             80A07200
                        *                                                                           80A07210
                        *                                                                           80A07220
0A24 1 4400 0CCC              BSI  L  SEBIT                                                         80A07230
0A26 0 FFFF                   DC      -1                                                            80A07240
0A27 1 0E87                   DC      WCCB                                                          80A07250
0A28 0 0001                   DC      1                                                             80A07260
                        *                                                                           80A07270
0A29 1 4400 0C7B              BSI  L  HDNG      PRINT. RTN HEADING                                  80A07280
                        *                                                                           80A07290
0A2B 1 4400 0CCC              BSI  L  SEBIT     SET UP DATA                                         80A07300
0A2D 0 0090                   DC      144                                                           80A07310
0A2E 1 0E90                   DC      BWORK                                                         80A07320
0A2F 0 0008                   DC      8                                                             80A07330
                        *                                                                           80A07340
0A30 0 70E8                   MDX     RT07B                                                         80A07350
                        ********************************************                                80A07360
                        *                                                                           80A07370
                        *                                                                           80A07380
                        *                                                                           80A07390
                        *                                                                           80A07400
                        *                       ROUTINE TEN                                         80A07410
                        *                                                                           80A07420
                        *                       CHARACTER COMPLIMENT                                80A07430
                        *                                                                           80A07440
                        *                     THIS ROUTINE PRINTS EACH                              80A07450
                        *                      CHARACTER IN ALL PRINT                               80A07460
                        *                      POSITIONS. %52 CHAR BAR¤                             80A07470
                        *                                                                           80A07480
                        *                                                                           80A07490
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0A31 1 4400 0CCC        RT09  BSI  L  SEBIT     SET UP HEADING                                      80A07500
0A33 0 000A                   DC      10                                                            80A07510
0A34 1 0EDC                   DC      CHARC                                                         80A07520
0A35 0 000A                   DC      10                                                            80A07530
                        *                                                                           80A07540
0A36 1 4400 0C7B              BSI  L  HDNG      PRINT RTN HEADING                                   80A07550
                        *                                                                           80A07560
0A38 1 4400 0CCC              BSI  L  SEBIT                                                         80A07570
0A3A 0 0090                   DC      144                                                           80A07580
0A3B 1 0E9E                   DC      ALPHA                                                         80A07590
0A3C 0 0024                   DC      36                                                            80A07600
0A3D 0 C2F5                   LD    2 SIZE-DST                                                    80A07610
0A3E 0 1801                   SRA     1                                                             80A07620
0A3F 1 D400 0F14              STO  L  BITS                                                          80A07630
0A41 0 C003                   LD      SIX8                                                          80A07640
0A42 0 D202                   STO   2 CYCNT-DST                                                     80A07650
0A43 1 4C00 096E              BSC  L  RT03A                                                         80A07660
                        *                                                                           80A07670
0A45 0 0048             SIX8  DC      72          CONSTANT                                          80A07680
                        ********************************************                                80A07690
                        *                                                                           80A07700
                        *                                                                           80A07710
                        *                                                                           80A07720
                        *                                                                           80A07730
                        *                       ROUTINE ELEVEN                                      80A07740
                        *                                                                           80A07750
                        *                       REGISTRATION                                        80A07760
                        *                                                                           80A07770
                        *                     THIS ROUTINE PRINTS A                                 80A07780
                        *                     FIELD OF I CHARACTERS                                 80A07790
                        *                     SUPERIMPOSED ON A FIELD                               80A07800
                        *                     OF H CHARACTERS WITH A                                80A07810
                        *                     FLOATING 1.                                           80A07820
                        *                                                                           80A07830
                        *                                                                           80A07840
0A46 1 4400 0CCC        RT0A  BSI  L  SEBIT     SET UP HEADING                                      80A07850
0A48 0 0006                   DC      6                                                             80A07860
0A49 1 0EE6                   DC      REGIS                                                         80A07870
0A4A 0 0006                   DC      6                                                             80A07880
                        *                                                                           80A07890
0A4B 1 4400 0C7B              BSI  L  HDNG      PRINT RTN HEADING                                   80A07900
                        *                                                                           80A07910
0A4D 0 C2F5                   LD    2 SIZE-DST                                                    80A07920
0A4E 0 D002                   STO     RT0AI                                                         80A07930
0A4F 1 4400 0CCC              BSI  L  SEBIT     SET UP DATA                                         80A07940
0A51 0 0090             RT0AI DC      144                                                           80A07950
0A52 1 0EEC                   DC      AITCH                                                         80A07960
0A53 0 0001                   DC      1                                                             80A07970
                        *                                                                           80A07980
0A54 0 C2F5                   LD    2 SIZE-DST    SET LINE COUNTER                                  80A07990
0A55 0 D202                   STO   2 CYCNT-DST                                                     80A08000
0A56 1 6700 0F14              LDX  L3 BITS                                                          80A08010
0A58 0 1801                   SRA     1                                                             80A08020
0A59 0 D300                   STO   3 0           SET WORD COUNT                                    80A08030
                        *                                                                           80A08040
0A5A 0 D004                   STO     RT0AJ&1                                                       80A08050
0A5B 0 C3D8                   LD    3 AITCH-BITS                                                  80A08060
0A5C 0 1808                   SRA     8                                                             80A08070
0A5D 0 1008                   SLA     8                                                             80A08080
0A5E 0 D700 0000        RT0AJ STO  L3 0                                                           80A08090
0A60 0 C2EC             RT0AA LD    2 TERM-DST.   SET SPACE SUPRESS                                 80A08100
0A61 1 7400 080F              MDX  L  ONLIN,0     IS UNIT ONLINE                                    80A08110
0A63 0 7001                   MDX     *&1         * YES                                             80A08120
0A64 0 D24E                   STO   2 KEEP-DST                                                      80A08130
0A65 0 1010                   SLA     16                                                            80A08140
0A66 0 92EC                   S     2 TERM-DST                                                      80A08150
0A67 0 EA3F                   OR    2 WRITE&1-DST                                                   80A08160
0A68 0 D23F                   STO   2 WRITE&1-DST                                                   80A08170
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                        *                                                       80A08180
0A69 0 6102                     LDX   1 2                                       80A08190
0A6A 1 4400 0C50                BSI   L PTRDY       PRINTER READY               80A08200
0A6C 1 4400 0CAC                BSI   L PRINT       PRINT ONE LINE              80A08210
0A6E 0 6109                     LDX   1 9                                       80A08220
0A6F 1 4400 0D14                BSI   L CKXFR       CK TRANSFER CMPLT           80A08230
0A71 0 610A                     LDX   1 10                                      80A08240
0A72 1 4400 0D3A                BSI   L CKPTR       CK PRINTER COMPLETE         80A08250
0A74 1 C400 080F                LD    L ONLIN       GET ONLINE SWITCH           80A08260
0A76 1 4420 0DF3                BSI   L DROPD,Z     RELEASE DEVICE ID &/-       80A08270
                        *                                                       80A08280
0A78 0 6700 0092                LDX   L3 146                                    80A08290
0A7A 1 C700 0F14        RTOAB   LD    L3 BITS       MODIFY FOR OVERPRINT        80A08300
0A7C 0 824F                     A     2 ONECH-DST                               80A08310
0A7D 1 D700 0F14                STO   L3 BITS                                   80A08320
0A7F 0 73FF                     MDX   3 -1                                      80A08330
0A80 0 70F9                     MDX     RTOAB                                   80A08340
                        *                                                       80A08350
0A81 0 1010                     SLA     16          RESET SPACE SUPRESS         80A08360
0A82 0 D24E                     STO   2 KEEP-DST                                80A08370
0A83 0 C23F                     LD    2 WRITE&1-DST                             80A08380
0A84 0 1801                     SRA     1                                       80A08390
0A85 0 1001                     SLA     1                                       80A08400
0A86 0 D23F                     STO   2 WRITE&1-DST                             80A08410
                        *                                                       80A08420
0A87 0 6102                     LDX   1 2                                       80A08430
0A88 1 4400 0C50                BSI   L PTRDY       PRINTER READY               80A08440
0A8A 1 4400 0CAC                BSI   L PRINT       PRINT ONE LINE              80A08450
0A8C 0 6109                     LDX   1 9                                       80A08460
0A8D 1 4400 0D14                BSI   L CKXFR       CK TRANSFER CMPLT           80A08470
0A8F 0 610A                     LDX   1 10                                      80A08480
0A90 1 4400 0D3A                BSI   L CKPTR       CK PRINTER CMPLT            80A08490
0A92 1 4400 0DC2                BSI   L ERRIT       PRINT ANY ERRORS            80A08500
0A94 1 4400 0D93                BSI   L LOGIT       LOG ANY MESSAGES            80A08510
0A96 1 74FF 0820                MDX   L CYCNT,-1    SKIP IF RTN DONE            80A08520
0A98 0 7002                     MDX     RTOAD                                   80A08530
0A99 1 4C00 08E0                BSC   L PCON        EXIT TO NEXT ROUTINE        80A08540
                        *                                                       80A08550
0A9B 0 6700 0092        RTOAD   LDX   L3 146                                    80A08560
0A9D 1 C700 0F14        RTOAC   LD    L3 BITS                                   80A08570
0A9F 0 924F                     S     2 ONECH-DST                               80A08580
0AA0 1 D700 0F14                STO   L3 BITS                                   80A08590
0AA2 0 73FF                     MDX   3 -1                                      80A08600
0AA3 0 70F9                     MDX     RTOAC                                   80A08610
                        *                                                       80A08620
0AA4 1 4400 0CB9                BSI   L ROTA        UPDATE OUTPUT FIELD         80A08630
0AA6 0 70B9                     MDX     RTOAA                                   80A08640
                        ********************************************            80A08650
                        *                                                       80A08660
                        *                                                       80A08670
                        *                                                       80A08680
                        *                                                       80A08690
                        *                                                       80A08700
                        *                   ROUTINE TWELVE                      80A08710
                        *                                                       80A08720
                        *                       STRESS                          80A08730
                        *                                                       80A08740
                        *                   THIS ROUTINE PRINTS THE             80A08750
                        *                    TYPE BAR IMAGE TO IMPOSE           80A08760
                        *                    WORST CASE STRESS ON THE           80A08770
                        *                    TYPE BAR DRIVE MECHANISM           80A08780
                        *                                                       80A08790
                        *                                                       80A08800
0AA7 1 4400 0CCC        RTOB    BSI   L SEBIT       SET UP HEADING              80A08810
0AA9 0 0003                     DC      3                                       80A08820
0AAA 1 0EED                     DC      STRES                                   80A08830
0AAB 0 0003                     DC      3                                       80A08840
                        *                                                       80A08850
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0AAC 1 4400 0C7B                BSI   L HDNG        PRINT RTN HEADING           80A08860
                        *                                                       80A08870
0AAE 1 4400 0CCC                BSI   L SEBIT       SET UP DATA                 80A08880
0AB0 0 0090                     DC      144                                     80A08890
0AB1 1 0EC2                     DC      STRSS                                   80A08900
0AB2 0 001A                     DC      26                                      80A08910
                        *                                                       80A08920
0AB3 0 C2F5                     LD    2 SIZE-DST                                80A08930
0AB4 0 1801                     SRA     1                                       80A08940
0AB5 1 D400 0F14                STO   L BITS                                    80A08950
0AB7 0 C003                     LD      FIVE2                                   80A08960
0AB8 0 D202                     STO   2 CYCNT-DST                               80A08970
                        *                                                       80A08980
0AB9 1 4C00 096E                BSC   L RT03A                                   80A08990
                        *                                                       80A09000
0ABB 0 0034             FIVE2   DC      52          CONSTANT                    80A09010
                        ********************************************            80A09020
                        *                                                       80A09030
                        *                                                       80A09040
                        *                                                       80A09050
                        *                   ROUTINE THIRTEEN                    80A09060
                        *                                                       80A09070
                        *                       SPACE IMMEDIATE                 80A09080
                        *                                                       80A09090
                        *                   THIS ROUTINE TESTS THE              80A09100
                        *                    CARRIAGE SPACE IMMEDIATE           80A09110
                        *                    CONTROL FUNCTION. THE              80A09120
                        *                    NORMAL SPACE AFTER PRINT           80A09130
                        *                    IS ALSO OBTAINED.                  80A09140
                        *                                                       80A09150
                        *                                                       80A09160
0ABC 1 4400 0CCC        RTOC    BSI   L SEBIT       SET UP RTN HEADING          80A09170
0ABE 0 0008                     DC      8                                       80A09180
0ABF 1 0F00                     DC      SPIM                                    80A09190
0AC0 0 0008                     DC      8                                       80A09200
                        *                                                       80A09210
0AC1 1 4400 0C7B                BSI   L HDNG        PRINT HEADING               80A09220
                        *                                                       80A09230
0AC3 0 C256                     LD    2 IMSP1-DST   SET TO IMMED SPACE          80A09240
0AC4 0 D23C                     STO   2 CNTRL-DST                               80A09250
0AC5 0 C24A                     LD    2 ONE-DST                                 80A09260
0AC6 0 D258                     STO   2 STEP-DST                                80A09270
                        *                                                       80A09280
0AC7 1 4400 0C0C                BSI   L SETIT       SET UP PRINT DATA           80A09290
                        *                                                       80A09300
0AC9 0 C216                     LD    2 DSW5&2-DST  REPEAT THREE TIMES          80A09310
0ACA 0 D202                     STO   2 CYCNT-DST                               80A09320
0ACB 0 D201             RTOC3   STO   2 RPCNT-DST                               80A09330
0ACC 1 4400 0C2F                BSI   L MOVE        SHIFT FLOATING SLASH        80A09340
0ACE 0 6101                     LDX   1 1                                       80A09350
0ACF 1 4400 0C50                BSI   L PTRDY       CK IF PRINTER READY         80A09360
                        *                                                       80A09370
0AD1 0 6104                     LDX   1 4           GIVE CONTROL COMMAND        80A09380
0AD2 1 4400 0C95                BSI   L FORMS                                   80A09390
                        *                                                       80A09400
0AD4 0 6105                     LDX   1 5           PRINT ONE LINE              80A09410
0AD5 1 4400 0CAC                BSI   L PRINT                                   80A09420
                        *                                                       80A09430
0AD7 0 6109                     LDX   1 9           CHECK TRANSFER CMPLT        80A09440
0AD8 1 4400 0D14                BSI   L CKXFR                                   80A09450
                        *                                                       80A09460
0ADA 0 610A                     LDX   1 10          CHECK PRINTER CMPLT         80A09470
0ADB 1 4400 0D3A                BSI   L CKPTR                                   80A09480
0ADD 1 4400 0DC2                BSI   L ERRIT       PRINT ANY ERRORS            80A09490
0ADF 1 4400 0D93                BSI   L LOGIT       LOG ANY MESSAGES            80A09500
                        *                                                       80A09510
0AE1 1 74FF 081F                MDX   L RPCNT,-1     SKIP IF DONE               80A09520
0AE3 0 70E8                     MDX     RTOC3&1                                 80A09530
```

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                        *                                                                  80A09540
0AE4 0 C23C                     LD    2 CNTRL-DST  ENLARGE THE SKIP                       80A09550
0AE5 0 8246                     A     2 K0100-DST                                        80A09560
0AE6 0 D23C                     STO   2 CNTRL-DST                                        80A09570
0AE7 1 7401 0F37                MDX   L BITS&35,1                                        80A09580
0AE9 1 7401 0876                MDX   L STEP,1                                          80A09590
                        *                                                                  80A09600
0AEB 0 C216                     LD    2 DSW5&2-DST                                       80A09610
0AEC 1 74FF 0820                MDX   L CYCNT,-1   SKIP IF DONE                          80A09620
0AEE 0 70DC                     MDX     RT0C3                                            80A09630
0AEF 1 4C00 08E0                BSC   L PCON                                           80A09640
                        ******************************************                       80A09650
                        *                                                                80A09660
                        *                                                                80A09670
                        *                                                                80A09680
                        *                                                                80A09690
                        *                  ROUTINE FOURTEEN                              80A09700
                        *                                                                80A09710
                        *                       SPACE AFTER PRINTING                     80A09720
                        *                                                                80A09730
                        *                  THIS ROUTINE TESTS THE                        80A09740
                        *                   SPACE AFTER PRINT 1443                       80A09750
                        *                   CONTROL FUNCTION.                            80A09760
                        *                                                                80A09770
0AF1 1 4400 0CCC    RT0D  BSI   L SEBIT       SET UP RTN HEADING                       80A09780
0AF3 0 0003               DC      3                                                      80A09790
0AF4 1 0F00               DC      SPIM                                                   80A09800
0AF5 0 0003               DC      3                                                      80A09810
                        *                                                                80A09820
0AF6 1 4400 0CCC          BSI   L SEBIT                                                  80A09830
0AF8 0 FFFA               DC      -6                                                     80A09840
0AF9 1 0EF2               DC      AFTER                                                  80A09850
0AFA 0 0006               DC      6                                                      80A09860
                        *                                                                80A09870
0AFB 1 4400 0C7B          BSI   L HDNG        PRINT HEADING                            80A09880
                        *                                                                80A09890
0AFD 0 C254               LD    2 WRSP1-DST  SET TO SPACE AFTER                          80A09900
0AFE 0 D23C               STO   2 CNTRL-DST * PRINTING                                   80A09910
0AFF 0 C24A               LD    2 ONE-DST                                              80A09920
0B00 0 D258               STO   2 STEP-DST                                             80A09930
0B01 1 4400 0C0C          BSI   L SETIT       SET UP PRINT DATA                        80A09940
                        *                                                                80A09950
0B03 0 C216               LD    2 DSW5&2-DST REPEAT THREE TIMES                          80A09960
0B04 0 D202               STO   2 CYCNT-DST                                            80A09970
0B05 0 D201         RT0D3 STO   2 RPCNT-DST                                            80A09980
0B06 1 4400 0C2F          BSI   L MOVE        SHIFT FLOATING SLASH                     80A09990
0B08 0 6101         RT0D4 LDX   1 1                                                    80A10000
0B09 1 4400 0C50          BSI   L PTRDY       CK IF PRINTER READY                      80A10010
                        *                                                                80A10020
0B0B 0 610A               LDX   1 10          GIVE CONTROL COMMAND                     80A10030
0B0C 1 4400 0C95          BSI   L FORMS                                                  80A10040
                        *                                                                80A10050
0B0E 0 6105               LDX   1 5           PRINT ONE LINE                           80A10060
0B0F 1 4400 0CAC          BSI   L PRINT                                                  80A10070
                        *                                                                80A10080
0B11 0 6109               LDX   1 9           CHECK TRANSFER CMPLT                     80A10090
0B12 1 4400 0D14          BSI   L CKXFR                                                  80A10100
                        *                                                                80A10110
0B14 0 610A               LDX   1 10          CHECK PRINTER CMPLT                      80A10120
0B15 1 4400 0D3A          BSI   L CKPTR                                                  80A10130
0B17 1 4400 0DC2          BSI   L ERRIT       PRINT ANY ERRORS                         80A10140
0B19 1 4400 0D93          BSI   L LOGIT       LOG ANY MESSAGES                         80A10150
                        *                                                                80A10160
0B1B 1 74FF 081F          MDX   L RPCNT,-1    SKIP IF DONE                             80A10170
0B1D 0 70E8               MDX     RT0D3&1                                              80A10180
0B1E 1 4400 0C2F          BSI   L MOVE                                                   80A10190
                        *                                                                80A10200
0B20 0 C23C               LD    2 CNTRL-DST  ENLARGE THE SKIP                          80A10210
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0B21 0 8246               A     2 K0100-DST                                            80A10220
0B22 0 D23C               STO   2 CNTRL-DST                                            80A10230
0B23 1 7401 0F37          MDX   L BITS&35,1                                            80A10240
0B25 1 7401 0876          MDX   L STEP,1                                               80A10250
                        *                                                              80A10260
0B27 0 C216               LD    2 DSW5&2-DST                                           80A10270
0B28 0 D201               STO   2 RPCNT-DST                                            80A10280
0B29 1 74FF 0820          MDX   L CYCNT,-1   SKIP IF DONE                              80A10290
0B2B 0 70DC               MDX     RT0D4                                                80A10300
0B2C 1 4C00 08E0          BSC   L PCON                                               80A10310
                        ******************************************                     80A10320
                        *                                                              80A10330
                        *                                                              80A10340
                        *                                                              80A10350
                        *                                                              80A10360
                        *                                                              80A10370
                        *                  ROUTINE FIFTEEN                             80A10380
                        *                                                              80A10390
                        *                       SKIP IMMEDIATE                         80A10400
                        *                                                              80A10410
                        *                  THIS ROUTINE TESTS THE                      80A10420
                        *                   CHANNEL SKIP IMMEDIATE                     80A10430
                        *                   CONTROL FUNCTION. THE                      80A10440
                        *                   NORMAL SPACE AFTER PRINT                   80A10450
                        *                   IS ALSO RECEIVED.                          80A10460
                        *                                                              80A10470
0B2E 1 4400 0CCC    RT0E  BSI   L SEBIT       SET UP RTN HEADING                     80A10480
0B30 0 0007               DC      7                                                    80A10490
0B31 1 0EF8               DC      SKIM                                                 80A10500
0B32 0 0007               DC      7                                                    80A10510
                        *                                                              80A10520
0B33 1 4400 0C7B          BSI   L HDNG        PRINT HEADING                          80A10530
                        *                                                              80A10540
0B35 1 4400 0C0C          BSI   L SETIT       SET UP RTN HEADING                     80A10550
                        *                                                              80A10560
0B37 0 6102               LDX     1 2                                                  80A10570
0B38 1 6D00 0876          STX   L1 STEP                                                80A10580
                        *                                                              80A10590
0B3A 0 C246               LD    2 K0100-DST                                            80A10600
0B3B 0 D23C               STO   2 CNTRL-DST                                            80A10610
                        *                                                              80A10620
0B3C 0 6700 2400          LDX   L3 /2400                                               80A10630
0B3E 0 6106               LDX   1 6                                                    80A10640
0B3F 0 406C               BSI     CHAN        PERFORM CARRIAGE OP                    80A10650
                        *                                                              80A10660
0B40 1 4400 0C0C          BSI   L SETIT       RESET OUTPUT DATA                      80A10670
                        *                                                              80A10680
0B42 0 6107               LDX   1 7                                                    80A10690
0B43 1 6D00 0F37          STX   L1 BITS&35                                             80A10700
                        *                                                              80A10710
0B45 0 6700 2000          LDX   L3 /2000                                               80A10720
0B47 0 6102               LDX   1 2                                                    80A10730
0B48 0 4063               BSI     CHAN        PERFORM CARRIAGE OP                    80A10740
                        *                                                              80A10750
0B49 0 6700 3000          LDX   L3 /3000                                               80A10760
0B4B 0 6101               LDX   1 1                                                    80A10770
0B4C 0 405F               BSI     CHAN        PERFORM CARRIAGE OP                    80A10780
                        *                                                              80A10790
0B4D 0 C246               LD    2 K0100-DST                                            80A10800
0B4E 1 EC00 0F37          OR    L BITS&35                                              80A10810
0B50 1 D400 0F37          STO   L BITS&35                                              80A10820
                        *                                                              80A10830
0B52 0 6700 3000          LDX   L3 /3000                                               80A10840
0B54 0 6101               LDX   1 1                                                    80A10850
0B55 0 4056               BSI     CHAN        PERFORM CARRIAGE OP                    80A10860
0B56 0 C246               LD    2 K0100-DST                                            80A10870
0B57 0 824A               A     2 ONE-DST                                              80A10880
0B58 1 D400 0F37          STO   L BITS&35                                              80A10890
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                        *
0B5A 0 6700 3000        LDX  L3 /3000
0B5C 0 6101             LDX   1 1
0B5D 0 404E             BSI     CHAN        PERFORM CARRIAGE OP
                        *
0B5E 0 6700 2800        LDX  L3 /2800
0B60 0 6101             LDX   1 1
0B61 0 404A             BSI     CHAN        PERFORM CARRIAGE OP
                        *
0B62 1 4C00 08E0        BSC  L  PCON
                        ********************************************
                        *
                        *
                        *
                        *
                        *
                        *                   ROUTINE  SIXTEEN
                        *
                        *                        SKIP AFTER PRINTING
                        *
                        *                   THIS ROUTINE TESTS THE
                        *                   CHANNEL SKIP AFTER PRINT
                        *                   CONTROL FUNCTION.
                        *
                        *
0B64 1 4400 0CCC        RTOF BSI  L  SEBIT      SET UP RTN HEADING
0B66 0 0008              DC      8
0B67 1 0EF0              DC      SKAP
0B68 0 0008              DC      8
                        *
0B69 0 6101             LDX   1 1           CK READY
0B6A 1 4400 0C50        BSI  L  PTRDY
                        *
0B6C 0 C253             LD    2 SPAC3-DST
0B6D 0 D23C             STO   2 CNTRL-DST
                        *
0B6E 0 6104             LDX   1 4           TRIPLE SPACE
0B6F 1 4400 0C95        BSI  L  FORMS
                        *
0B71 0 C255             LD    2 WRSK1-DST
0B72 0 D23C             STO   2 CNTRL-DST
                        *
0B73 0 6101             LDX   1 1
0B74 0 6700 0400        LDX  L3 /0400
0B76 0 4065             BSI     SHAN        PERFORM CARRIAGE OP
                        *
0B77 1 4400 0C0C        BSI  L  SETIT       SET UP RTN DATA
                        *
0B79 0 6102             LDX   1 2
0B7A 1 6D00 0876        STX  L1 STEP
                        *
0B7C 0 6300             LDX   3 0
0B7D 0 6106             LDX   1 6
0B7E 0 405D             BSI     SHAN        PERFORM CARRIAGE OP
                        *
0B7F 1 4400 0C0C        BSI  L  SETIT
                        *
0B81 0 6102             LDX   1 2
0B82 1 6D00 0876        STX  L1 STEP
0B84 0 6107             LDX   1 7
0B85 1 6D00 0F37        STX  L1 BITS&35
                        *
0B87 0 6300             LDX   3 0
0B88 0 6101             LDX   1 1
0B89 0 4052             BSI     SHAN        PERFORM CARRIAGE OP
                        *
0B8A 0 6700 1000        LDX  L3 /1000
0B8C 0 6101             LDX   1 1
```

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80A10900
80A10910
80A10920
80A10930
80A10940
80A10950
80A10960
80A10970
80A10980
80A10990
80A11000
80A11010
80A11020
80A11030
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80A11080
80A11090
80A11100
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80A11120
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80A11150
80A11160
80A11170
80A11180
80A11190
80A11200
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80A11470
80A11480
80A11490
80A11500
80A11510
80A11520
80A11530
80A11540
80A11550
80A11560
80A11570
```



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0B8D 0 404E             BSI     SHAN        PERFORM CARRIAGE OP
                        *
0B8E 0 6700 1000        LDX  L3 /1000
0B90 0 6101             LDX   1 1
0B91 0 404A             BSI     SHAN        PREFORM CARRIAGE OP
                        *
0B92 0 C246             LD    2 K0100-DST
0B93 1 EC00 0F37        OR   L  BITS&35
0B95 1 D400 0F37        STO  L  BITS&35
                        *
0B97 0 6700 1000        LDX  L3 /1000
0B99 0 6101             LDX   1 1
0B9A 0 4041             BSI     SHAN        PERFORM CARRIAGE OP
                        *
0B9B 0 C246             LD    2 K0100-DST
0B9C 0 824A             A     2 ONE-DST
0B9D 1 D400 0F37        STO  L  BITS&35
                        *
0B9F 0 6700 0800        LDX  L3 /0800
0BA1 0 6101             LDX   1 1
0BA2 0 4039             BSI     SHAN        EXECUTE CARRIAGE OP
                        *
0BA3 0 C255             LD    2 WRSK1-DST
0BA4 0 D23C             STO   2 CNTRL-DST
                        *
0BA5 0 6700 0400        LDX  L3 /0400
0BA7 0 6101             LDX   1 1
0BA8 1 4400 0BDC        BSI  L  SHAN        CHECK CHAN 12
                        *
0BAA 1 4C00 08E0        BSC  L  PCON
                        ********************************************
                        *
                        *
                        *
                        *                        SKIP IMMEDIATE CHANNEL
                        *                             CHECK SUBROUTINE
                        *
0BAC 0 0000             CHAN  DC      /0000
0BAD 1 6D00 081F              STX  L1 RPCNT       SET REPEAT COUNTER
0BAF 1 6F00 083C        CHAN1 STX  L3 DSW7&2
                        *
0BB1 0 6101             LDX   1 1
0BB2 1 4400 0C50        BSI  L  PTRDY       CK PTR READY
                        *
0BB4 0 6104             LDX   1 4
0BB5 1 4400 0C95        BSI  L  FORMS       PERFORM CONTROL
                        *
0BB7 0 1010             SLA     16          SET SPACE SUPRESS
0BB8 0 92EC             S     2 TERM-DST
0BB9 0 EA3F             OR    2 WRITE&1-DST
0BBA 0 D23F             STO   2 WRITE&1-DST
0BBB 0 6105             LDX   1 5           PERFORM PRINT
0BBC 1 4400 0CAC        BSI  L  PRINT
0BBE 0 C23F             LD    2 WRITE&1-DST RESET SPACE SUPRESS
0BBF 0 1801             SRA     1
0BC0 0 1001             SLA     1
0BC1 0 D23F             STO   2 WRITE&1-DST
                        *
0BC2 0 6109             LDX   1 9           CK XFER CMPLT
0BC3 1 4400 0D14        BSI  L  CKXFR
                        *
0BC5 0 6107             LDX   1 7
0BC6 1 4400 0D3A        BSI  L  CKPTR       CK PTR CMPLT
                        *
0BC8 1 4400 0DC2        BSI  L  ERRIT
0BCA 1 4400 0D93        BSI  L  LOGIT
                        *
0BCC 1 7401 0F37        MDX  L  BITS&35,1
```

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80A11580
80A11590
80A11600
80A11610
80A11620
80A11630
80A11640
80A11650
80A11660
80A11670
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80A11690
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80A12140
80A12150
80A12160
80A12170
80A12180
80A12190
80A12200
80A12210
80A12220
80A12230
80A12240
80A12250
```

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                                *
0BCE 0 C23C                     LD    2 CNTRL-DST
0BCF 0 8246                     A     2 K0100-DST
0BD0 0 D23C                     STO   2 CNTRL-DST
                                *
0BD1 0 405D                     BSI     MOVE
0BD2 0 405C                     BSI     MOVE
0BD3 0 405B                     BSI     MOVE
0BD4 0 405A                     BSI     MOVE
                                *
0BD5 0 6700 2000                LDX   L3 /2000
0BD7 1 74FF 081F                MDX   L  RPCNT,-1
0BD9 0 70D5                     MDX      CHAN1
                                *
0BDA 1 4C80 0BAC                BSC   I  CHAN
                                ********************************************
                                *
                                *
                                *
                                *                    SKIP AFTER PRINT CHANNEL
                                *                       CHECK SUBROUTINE
                                *
0BDC 0 0000                     SHAN  DC      /0000
0BDD 1 6D00 081F                      STX   L1 RPCNT       SET REPEAT COUNTER
0BDF 1 6F00 083C                SHAN1 STX   L3 DSW7&2
                                *
0BE1 0 6101                           LDX     1 1
0BE2 1 4400 0C50                      BSI   L  PTRDY       CK PTR READY
                                *
0BE4 0 610A                           LDX     1 10
0BE5 1 4400 0C95                      BSI   L  FORMS       PERFORM CONTROL
                                *
0BE7 0 6105                           LDX     1 5          PERFORM PRINT
0BE8 1 4400 0CAC                      BSI   L  PRINT
                                *
0BEA 0 6109                           LDX     1 9          CK XFER CMPLT
0BEB 1 4400 0D14                      BSI   L  CKXFR
                                *
0BED 0 610A                           LDX     1 10
0BEE 1 4400 0D3A                      BSI   L  CKPTR       CK PTR CMPLT
                                *
0BF0 0 6101                           LDX     1 1
0BF1 1 4400 0C50                      BSI   L  PTRDY       AWAIT CARRIAGE READY
                                *
0BF3 0 0A43                           XIO     2 SENSD-DST
0BF4 0 6107                           LDX     1 7
0BF5 1 4400 0D5E                      BSI   L  QLOG        SAVE STATUS
0BF7 1 4400 0CFF                      BSI   L  SBANA       CHECK FOR CHANNEL
                                *
0BF9 1 4400 0DC2                      BSI   L  ERRIT
0BFB 1 4400 0D93                      BSI   L  LOGIT
                                *
0BFD 1 7401 0F37                      MDX   L  BITS&35,1
                                *
0BFF 0 C23C                           LD      2 CNTRL-DST
0C00 0 8246                           A       2 K0100-DST
0C01 0 D23C                           STO     2 CNTRL-DST
                                *
0C02 0 402C                           BSI     MOVE
0C03 0 402B                           BSI     MOVE
0C04 0 402A                           BSI     MOVE
0C05 0 4029                           BSI     MOVE
                                *
0C06 0 6300                           LDX     3 0
0C07 1 74FF 081F                      MDX   L  RPCNT,-1
0C09 0 70D5                           MDX      SHAN1
                                *
0C0A 1 4C80 0BDC                      BSC   I  SHAN
```

```
80A12260
80A12270
80A12280
80A12290
80A12300
80A12310
80A12320
80A12330
80A12340
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80A12370
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80A12900
80A12910
80A12920
80A12930
```



```
                                ********************************************
                                *
                                *
                                *
                                *                    SETUP CARRIAGE TEST
                                *                       OUTPUT ROUTINE
                                *
0C0C 0 0000                     SETIT DC      /0000
0C0D 1 4400 0CCC                      BSI   L  SEBIT       SET UP PRINT FIELD
0C0F 0 001E                           DC      30
0C10 1 0E66                           DC      BLANK
0C11 0 0001                           DC      1
                                *
                                *
0C12 0 C2E2                           LD      2 RID-DST
0C13 0 82EC                           A       2 TERM-DST
0C14 0 100E                           SLA     14
0C15 1 4C10 0C1D                      BSC   L  SETT1,-     BR IF SPACING
                                *
0C17 1 4400 0CCC                      BSI   L  SEBIT
0C19 0 FFFA                           DC      -6
0C1A 1 0F08                           DC      CNNL
0C1B 0 0006                           DC      6
                                *
0C1C 0 7005                           MDX     SETT2
                                *
0C1D 1 4400 0CCC                SETT1 BSI   L  SEBIT
0C1F 0 FFFA                           DC      -6
0C20 1 0F0E                           DC      SPCC
0C21 0 0006                           DC      6
                                *
0C22 1 4400 0CCC                SETT2 BSI   L  SEBIT
0C24 0 FFE8                           DC      -24
0C25 1 0EFF                           DC      E
0C26 0 0001                           DC      1
                                *
0C27 0 C257                           LD      2 SLASH-DST  SET FLOATING SLASH
0C28 1 D400 0F50                      STO   L  BITS&60
                                *
0C2A 0 C24A                           LD      2 ONE-DST
0C2B 1 D400 0F37                      STO   L  BITS&35
                                *
0C2D 1 4C80 0C0C                      BSC   I  SETIT       RETURN
                                ********************************************
                                *
                                *
                                *
0C2F 0 0000                     MOVE  DC      /0000
0C30 0 C258                           LD      2 STEP-DST
0C31 0 1003                           SLA     3
0C32 0 D001                           STO     *&1
0C33 0 6700 0000                      LDX   L3 /0000
                                *
0C35 1 6580 0F14                      LDX     I1 BITS
0C37 1 C500 0F14                      LD      L1 BITS
0C39 0 18D0                           RTE     16
0C3A 1 C500 0F13                      LD      L1 BITS-1
0C3C 0 1380                           SLT     3 0
0C3D 1 4C08 0C47                      BSC   L  MOVE4,&     BR IF BLANK
0C3F 1 D500 0F13                      STO     L1 BITS-1
0C41 0 18D0                           RTE     16
0C42 1 4C08 0C4C                      BSC   L  MOVE5,&     BR IF BLANK
0C44 1 D500 0F14                      STO     L1 BITS
0C46 0 7007                           MDX     MOVE6
                                *
0C47 0 C257                     MOVE4 LD      2 SLASH-DST
0C48 1 D500 0F12                      STO     L1 BITS-2
0C4A 1 74FF 0F14                      MDX   L  BITS,-1
```

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80A12940
80A12950
80A12960
80A12970
80A12980
80A12990
80A13000
80A13010
80A13020
80A13030
80A13040
80A13050
80A13060
80A13070
80A13080
80A13090
80A13100
80A13110
80A13120
80A13130
80A13140
80A13150
80A13160
80A13170
80A13180
80A13190
80A13200
80A13210
80A13220
80A13230
80A13240
80A13250
80A13260
80A13270
80A13280
80A13290
80A13300
80A13310
80A13320
80A13330
80A13340
80A13350
80A13360
80A13370
80A13380
80A13390
80A13400
80A13410
80A13420
80A13430
80A13440
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80A13470
80A13480
80A13490
80A13500
80A13510
80A13520
80A13530
80A13540
80A13550
80A13560
80A13570
80A13580
80A13590
80A13600
80A13610
```

```
                        *
0C4C 1 74FF 0F14    MOVE5 MDX  L  BITS,-1                                80A13620
0C4E 1 4C80 0C2F    MOVE6 BSC  I  MOVE       RETURN                      80A13630
                        ********************************************      80A13640
                        *                                                 80A13650
                        *                                                 80A13660
                        *                                                 80A13670
                        *                  PRINTER READY ROUTINE          80A13680
                        *                                                 80A13690
                        *                   THIS ROUTINE WAITS FOR        80A13700
                        *                    THE DSW TO APPEAR AS         80A13710
                        *                    SPECIFIED BY XR1. IF         80A13720
                        *                    IT NEVER APPEARS PROPER      80A13730
                        *                    THEN ERRORS WILL BE          80A13740
                        *                    PRINTED.                     80A13750
                        *                                                 80A13760
                        *                   CALL **********************   80A13770
                        *                     * LDX  1 MSG ID NO    *     80A13780
                        *                     * BSI L  PTRDY        *     80A13790
                        *                     ************************    80A13800
                        *                                                 80A13810
0C50 0 0000         PTRDY DC      /0000                                   80A13820
0C51 0 691F               STX   1 PTRY4&1                                 80A13830
0C52 0 C01E               LD      PTRY4&1                                 80A13840
0C53 0 1002               SLA     2                                       80A13850
0C54 0 D00A               STO     PTRY3&1                                 80A13860
0C55 0 C245         PTRY1 LD    2 K0400-DST                               80A13870
0C56 0 D203               STO   2 WACNT-DST                               80A13880
0C57 1 4400 0E06          BSI   L GETDE       GO REQUEST DEVICE           80A13890
0C59 0 0A41               XIO   2 SENSO-DST   SENSE DSW - NO RESET        80A13900
0C5A 1 4400 0D5E          BSI   L QLOG        SAVE STATUS                 80A13910
0C5C 1 6600 081E    PTRY2 LDX   L2 DST                                     80A13920
0C5E 0 6500 0000    PTRY3 LDX   L1 /0000                                  80A13930
0C60 0 0A41               XIO   2 SENSO-DST   SENSE DSW - NO RESET        80A13940
0C61 1 4400 0CFF          BSI   L SBANA                                   80A13950
0C63 0 E901               OR    1 1                                       80A13960
0C64 1 4C18 0C70          BSC   L PTRY4,&-    BR IF PRINTER READY         80A13970
                        *                                                 80A13980
0C66 1 74FF 0821          MDX   L WACNT,-1                                80A13990
0C68 0 700E               MDX     PTRY9                                   80A14000
0C69 0 1010               SLA     16                                      80A14010
0C6A 0 D24E               STO   2 KEEP-DST                                80A14020
0C6B 1 4400 0DC2          BSI   L ERRIT       PRINT ANY ERRORS            80A14030
0C6D 1 4400 0D93          BSI   L LOGIT       LOG ANY MESSAGES            80A14040
0C6F 0 70E5               MDX     PTRY1                                   80A14050
                        *                                                 80A14060
                        *                                                 80A14070
0C70 0 6500 0000    PTRY4 LDX   L1 /0000                                  80A14080
0C72 1 4400 0D5E          BSI   L QLOG        SAVE STATUS                 80A14090
0C74 0 6105               LDX   1 5                                       80A14100
0C75 1 4C80 0C50          BSC   I PTRDY       EXIT TO USER                80A14110
                        *                                                 80A14120
                        *                                                 80A14130
0C77 1 6600 0C5C    PTRY9 LDX   L2 PTRY2                                  80A14140
0C79 1 4C00 0DBE          BSC   L LOPGO                                   80A14150
                        ********************************************      80A14160
                        *                                                 80A14170
                        *                                                 80A14180
                        *                                                 80A14190
                        *                  PRINT HEADING ROUTINE          80A14200
                        *                                                 80A14210
                        *                                                 80A14220
                        *                  SAVE STATUS ROUTINE            80A14230
                        *                                                 80A14240
0C7B 0 0000         HDNG  DC      /0000                                   80A14250
0C7C 0 6101               LDX   1 1                                       80A14260
0C7D 1 4400 0C50          BSI   L PTRDY       CK IF PTR READY             80A14270
                        *                                                 80A14280
                                                                          80A14290
```



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0C7F 0 C253               LD    2 SPAC3-DST  SET TO TRIPLE SPACE         80A14300
0C80 0 D23C               STO   2 CNTRL-DST                               80A14310
                        *                                                 80A14320
0C81 0 6104               LDX   1 4                                       80A14330
0C82 1 4400 0C95          BSI   L FORMS       PERFORM SPACING             80A14340
                        *                                                 80A14350
0C84 0 6105               LDX   1 5                                       80A14360
0C85 1 4400 0CAC          BSI   L PRINT       PRINT HEADING               80A14370
0C87 0 6109               LDX   1 9                                       80A14380
0C88 1 4400 0D14          BSI   L CKXFR       WAIT FOR XFER CMPLT         80A14390
0C8A 0 610A               LDX   1 10                                      80A14400
0C8B 1 4400 0D3A          BSI   L CKPTR       BR TO CK PRNTR              80A14410
0C8D 1 4400 0DF3          BSI   L DROPD       BR TO RELEASE DEVICE        80A14420
                        *                                                 80A14430
0C8F 1 6700 0D74          LDX   L3 MSGAR&2    RESET LOG AREA              80A14440
0C91 1 6F00 0D61          STX   L3 QLOG1&1                                80A14450
0C93 1 4C80 0C7B          BSC   I  HDNG       RETURN                      80A14460
                        ********************************************      80A14470
                        *                                                 80A14480
                        *                                                 80A14490
                        *                  CARRIAGE CONTROL ROUTINE       80A14500
                        *                                                 80A14510
                        *                   THIS ROUTINE PERFORMS         80A14520
                        *                    CARRIAGE CONTROL AND         80A14530
                        *                    CHECKS THE DSW AFTER         80A14540
                        *                    THE XIO CONTROL COMMAND.     80A14550
                        *                                                 80A14560
                        *                   CALL **********************   80A14570
                        *                     *  LDX  1 MSG ID NO   *     80A14580
                        *                     *  BSI L  FORMS       *     80A14590
                        *                     ************************    80A14600
                        *                                                 80A14610
                        *                                                 80A14620
0C95 0 0000         FORMS DC      /0000                                   80A14630
0C96 0 C246               LD    2 K0100-DST  RESTORE PRINT WORDS          80A14640
0C97 0 D242               STO   2 PRDSW-DST                               80A14650
0C98 0 D240               STO   2 XFDSW-DST                               80A14660
                        *                                                 80A14670
0C99 0 0A3C               XIO   2 CNTRL-DST  CONTROL 1443                 80A14680
0C9A 0 0A41               XIO   2 SENSO-DST  SENSE - NO RESET             80A14690
0C9B 0 1000               NOP     0                                       80A14700
                        *                                                 80A14710
0C9C 1 4400 0D5E          BSI   L QLOG        SAVE STATUS                 80A14720
0C9E 1 4400 0CFF          BSI   L SBANA       CHECK FOR BUSY              80A14730
0CA0 0 610A               LDX   1 10                                      80A14740
0CA1 1 4400 0D3A          BSI   L CKPTR       GO CK PRNTR                 80A14750
0CA3 1 4400 0DC2          BSI   L ERRIT       BR TO ERROR RTN             80A14760
0CA5 1 4400 0D93          BSI   L LOGIT       BR TO LOG RTN               80A14770
0CA7 0 6101               LDX   1 1                                       80A14780
0CA8 1 4400 0C50          BSI   L PTRDY       BR TP CK FOR RDY            80A14790
0CAA 1 4C80 0C95          BSC   I FORMS       EXIT                        80A14800
                        ********************************************      80A14810
                        *                                                 80A14820
                        *                                                 80A14830
                        *                  PRINT ROUTINE                  80A14840
                        *                                                 80A14850
                        *                  THIS ROUTINE PRINTS DATA       80A14860
                        *                   AND CHECKS THE DSW AFTER      80A14870
                        *                   XIO INITIALIZE WRITE          80A14880
                        *                   COMMAND.                      80A14890
                        *                                                 80A14900
                        *                  CALL **********************    80A14910
                        *                   *   LDX  1 MSG ID NO   *      80A14920
                        *                   *   BSI L  PRINT       *      80A14930
                        *                   ************************      80A14940
                        *                                                 80A14950
0CAC 0 0000         PRINT DC      /0000                                   80A14960
                                                                          80A14970
```

```
0CAD 0 C246              LD    2 K0100-DST  RESTORE INTRPT WORDS      80A14980
0CAE 0 D242              STO   2 PRDSW-DST                            80A14990
0CAF 0 D240              STO   2 XFDSW-DST                            80A15000
                      *                                               80A15010
0CB0 0 0A3E              XIO   2 WRITE-DST  PRINT LINE                80A15020
0CB1 0 0A41              XIO   2 SENSO-DST  SENSE - NO RESET          80A15030
0CB2 0 1000              NOP   0                                      80A15040
0CB3 1 4400 0D5E         BSI  L  QLOG       SAVE STATUS               80A15050
0CB5 1 4400 0CFF         BSI  L  SBANA      CHECK FOR BUSY            80A15060
0CB7 1 4C80 0CAC         BSC  I  PRINT      EXIT                      80A15070
                      ********************************************** 80A15080
                      *                                               80A15090
                      *                                               80A15100
                      *                                               80A15110
                      *              SHIFT OUTPUT ROUTINE             80A15120
                      *              THE ROTATE ROUTINE SHIFTS        80A15130
                      *            * ALL CHARACTERS IN OUTPUT         80A15140
                      *            * AREA ONE PLACE.                  80A15150
                      *                                               80A15160
                      *                                               80A15170
0CB9 0 0000           ROTA  DC      /0000                            80A15180
0CBA 0 6A0E                 STX   2 ROTA2&1    SAVE XR2               80A15190
0CBB 0 6600 0090            LDX  L2 144        SET TO END OF TABLE    80A15200
0CBD 1 C400 0F15            LD   L  BITS&1     PLACE 1ST CHAR LAST    80A15210
0CBF 0 18D0                 RTE     16                                80A15220
0CC0 1 C600 0F14      ROTA1 LD   L2 BITS       PICK UP NEXT WORD      80A15230
0CC2 0 18D8                 RTE     24                                80A15240
0CC3 1 D600 0F14            STO  L2 BITS       SAVE ADVANCED CHARS    80A15250
0CC5 0 1088                 SLT     8                                 80A15260
0CC6 0 72FF                 MDX   2 -1         CHECK IF TABLE CMPLT   80A15270
0CC7 0 70F8                 MDX     ROTA1                             80A15280
0CC8 0 6600 0000      ROTA2 LDX  L2 /0000      RESTORE XR2            80A15290
0CCA 1 4C80 0CB9            BSC  I  ROTA                              80A15300
                      ********************************************** 80A15310
                      *                                               80A15320
                      *                                               80A15330
                      *                                               80A15340
                      *                SET PRINTER OUTPUT ROUTINE     80A15350
                      *                                               80A15360
                      *                THIS ROUTINE SETS DATA IN      80A15370
                      *                 THE 1443 OUTPUT AREA.         80A15380
                      *                 THE WORD COUNT IS PLACED      80A15390
                      *                 EQUAL TO THE TOTAL DATA       80A15400
                      *                 SIZE.                         80A15410
                      *                                               80A15420
                      *                CALL **********************    80A15430
                      *                  *  BSI L   SEBIT       *     80A15440
                      *                  *  DC      DATA SIZE   *     80A15450
                      *                  *  DC      SOURCE ADDR *     80A15460
                      *                  *  DC      SOURCE SIZE *     80A15470
                      *                  **********************       80A15480
                      *                                               80A15490
                      *                TO ADD TO EXISTING DATA        80A15500
                      *                 THE DATA SIZE SHOULD BE       80A15510
                      *                 SPECIFIED NEGATIVELY.         80A15520
                      *                                               80A15530
                      *                XR1 AND XR2 ARE SAVED          80A15540
                      *                                               80A15550
0CCC 0 0000           SEBIT DC      0                                 80A15560
                      *                                               80A15570
0CCD 0 6924                 STX   1 SEBOT&1    SAVE INDEX REGS        80A15580
0CCE 0 6A25                 STX   2 SEBOT&3                           80A15590
                      *                                               80A15600
0CCF 1 6780 0CCC            LDX  I3 SEBIT      FETCH CALLING ADDR     80A15610
                      *                                               80A15620
0CD1 1 6600 0F14            LDX  L2 BITS       INITIALIZE RTN         80A15630
0CD3 0 6A18                 STX   2 PUT&1                             80A15640
                      *                                               80A15650
```



```
0CD4 0 C300              LD    3 0          FETCH WORD COUNT          80A15660
0CD5 1 4C30 0CFA         BSC  L  RSTWC,-Z   BR IF RESTORE FIELD       80A15670
                      *                                               80A15680
0CD7 1 C400 0F14         LD   L  BITS       ADD TO EXISTNG FIELD      80A15690
0CD9 0 8012              A       PUT&1                                 80A15700
0CDA 0 D011              STO     PUT&1                                 80A15710
                      *                                               80A15720
0CDB 0 C300              LD    3 0          MAKE WORD COUNT           80A15730
0CDC 0 9300              S     3 0          * POSITIVE                80A15740
0CDD 0 9300              S     3 0                                    80A15750
0CDE 0 D001           STOLX STO     LXR2&1                            80A15760
                      *                                               80A15770
0CDF 0 6600 0000      LXR2  LDX  L2 0          LOAD XR2 WITH WD CNT   80A15780
0CE1 0 C301                 LD    3 1          FETCH SOURCE DATA AD      80A15790
0CE2 1 8400 080A            A    L  TERM                               80A15800
0CE4 0 D005                 STO     GET&1                             80A15810
                      *                                               80A15820
0CE5 0 C302           LXR1  LD    3 2          FETCH SOURCE SIZE         80A15830
0CE6 0 D001                 STO     *&1                               80A15840
0CE7 0 6500 0000            LDX  L1 0                                 80A15850
0CE9 0 C500 0000      GET   LD   L1 0          XFER SOURCE DATA          80A15860
0CEB 0 D600 0000      PUT   STO  L2 0          * TO PRINT AREA           80A15870
0CED 1 7401 0F14            MDX  L  BITS,1     INCR PRINT FIELD WC       80A15880
                      *                                               80A15890
0CEF 0 72FF                 MDX   2 -1                                80A15900
0CF0 0 7006                 MDX     DECXO      RET TO XFER NXT DATA      80A15910
                      *                                               80A15920
0CF1 0 6500 0000      SEBOT LDX  L1 0          FINISHED WITH XFER        80A15930
0CF3 0 6600 0000            LDX  L2 0          * RESTORE XRS             80A15940
0CF5 0 4F00 0003            BSC  L3 3          RETURN                    80A15950
                      *                                               80A15960
0CF7 0 71FF           DECXO MDX   1 -1                                  80A15970
0CF8 0 70F0                 MDX     GET        GO XFER NEXT DATA         80A15980
0CF9 0 70EB                 MDX     LXR1       FULL - WRAP DATA          80A15990
                      *                        * AROUND IN PRINT AR      80A16000
                      *                                               80A16010
0CFA 0 1010           RSTWC SLA     16         RESET PRINT FIELD WC      80A16020
0CFB 1 D400 0F14            STO  L  BITS                              80A16030
0CFD 0 C300                 LD    3 0                                 80A16040
0CFE 0 70DF                 MDX     STOLX                             80A16050
                      ********************************************** 80A16060
                      *                                               80A16070
                      *                                               80A16080
                      *                                               80A16090
                      *            STATUS ANALYSIS ROUTINE            80A16100
                      *                                               80A16110
                      *            THIS ROUTINE CHECKS THE            80A16120
                      *             DSW FOR THE PROPER BITS           80A16130
                      *             AND SAVES ANY ERRORS IN           80A16140
                      *             THE FORM OF DSW WAS AND           80A16150
                      *             DSW SHOULD HAVE BEEN.             80A16160
                      *                                               80A16170
                      *            CALL **********************        80A16180
                      *              *  LDX  1 4XMSG ID NO *          80A16190
                      *              *  BSI L  SBANA       *          80A16200
                      *              **********************           80A16210
                      *                                               80A16220
                      *            THE MSG ID NO REFERS TO A          80A16230
                      *             STRING. THIS STRING IS            80A16240
                      *             CALLED DSWN FOR MSG ID            80A16250
                      *             NUMBER N. THE STRING IS.          80A16260
                      *                                               80A16270
                      *            DSWN DC      DSW WAS               80A16280
                      *                 DC      DSW S/B               80A16290
                      *                 DC      EXPECTED DSW          80A16300
                      *                 DC      MASK FOR CKG          80A16310
                      *                                               80A16320
0CFF 0 0000           SBANA DC      /0000                             80A16330
```

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0D00 1 7500 081E          MDX  L1 DST         FETCH ANALYSIS MSG        80A16340
0D02 0 1000               NOP     0                                     80A16350
0D03 0 D248               STO   2 SBANQ-DST                             80A16360
0D04 0 18D0               RTE     16                                    80A16370
0D05 0 C248               LD    2 SBANQ-DST                             80A16380
0D06 0 F102               EOR   1 2           CK AGAINST EXPECTED       80A16390
0D07 0 E103               AND   1 3           REMOVE UNNEC BITS         80A16400
0D08 0 D100               STO   1 0                                     80A16410
0D09 0 D101               STO   1 1                                     80A16420
0D0A 1 4C98 0CFF          BSC   I SBANA,&-    EXIT IF DSW OK            80A16430
0D0C 0 C103               LD    1 3           SET DSW S/B               80A16440
0D0D 0 F2EC               EOR   2 TERM-DST                              80A16450
0D0E 0 E248               AND   2 SBANQ-DST                             80A16460
0D0F 0 E902               OR    1 2                                     80A16470
0D10 0 18D0               RTE     16                                    80A16480
0D11 0 D900               STD   1 0           SAVE ANY ERROR FOUND      80A16490
                     *                                                  80A16500
0D12 1 4C80 0CFF          BSC   I SBANA       EXIT                      80A16510
                     ********************************************       80A16520
                     *                                                  80A16530
                     *                                                  80A16540
                     *                                                  80A16550
                     *                  CHECK TRANSFER COMPLETE         80A16560
                     *                     ROUTINE                      80A16570
                     *                                                  80A16580
0D14 0 0000          CKXFR DC      /0000                               80A16590
0D15 0 C246                LD    2 K0100-DST  RESET WAIT COUNTER        80A16600
0D16 0 1802                SRA     2                                    80A16610
0D17 0 D203                STO   2 WACNT-DST                           80A16620
                     *                                                  80A16630
0D18 0 6901                STX   1 *&1                                 80A16640
0D19 0 6500 0000     CKXF1 LDX   L1 /0000                              80A16650
0D1B 1 6600 081E           LDX   L2 DST                                80A16660
0D1D 0 C240                LD    2 XFDSW-DST                           80A16670
0D1E 0 F246                EOR   2 K0100-DST                           80A16680
0D1F 1 4C18 0D26           BSC   L CKXF7,&-    BR IF XFER NOT CMPLT      80A16690
                     *                                                  80A16700
0D21 0 C240                LD    2 XFDSW-DST                           80A16710
0D22 0 403B                BSI     QLOG        SAVE STATUS               80A16720
0D23 0 40DB                BSI     SBANA       CHECK FOR ERROR           80A16730
                     *                                                  80A16740
0D24 1 4C80 0D14     CKXF3 BSC   I CKXFR       RETURN                    80A16750
                     *                                                  80A16760
                     *                                                  80A16770
0D26 1 74FF 0821     CKXF7 MDX   L WACNT,-1                            80A16780
0D28 0 700D                MDX     CKXF8                                80A16790
0D29 0 C0F0                LD      CKXF1&1                              80A16800
0D2A 0 1002                SLA     2                                    80A16810
0D2B 0 D001                STO     *&1                                  80A16820
0D2C 0 6500 0000           LDX   L1 /0000                              80A16830
0D2E 0 0A43                XIO   2 SENSD-DST                           80A16840
0D2F 0 EA46                OR    2 K0100-DST                           80A16850
0D30 0 40CE                BSI     SBANA       SAVE ERROR MESSAGE        80A16860
0D31 0 F246                EOR   2 K0100-DST                           80A16870
0D32 0 DA34                STD   2 DSWD-DST                            80A16880
0D33 0 10A0                SLT     32                                   80A16890
0D34 0 D900                STD   1 0                                   80A16900
0D35 0 70EE                MDX     CKXF3                               80A16910
                     *                                                  80A16920
0D36 1 6600 0D19     CKXF8 LDX   L2 CKXF1      TRY AGAIN - LATER         80A16930
0D38 1 4C00 0DBE           BSC   L LOPGO                               80A16940
                     ********************************************       80A16950
                     *                                                  80A16960
                     *                                                  80A16970
0D3A 0 0000          CKPTR DC      /0000                               80A16980
0D3B 0 C245                LD    2 K0400-DST  RESET WAIT COUNTER        80A16990
0D3C 0 D203                STO   2 WACNT-DST                           80A17000
                                                                       80A17010
```



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                     *                                                  80A17020
0D3D 0 6901                STX   1 *&1                                 80A17030
0D3E 0 6500 0000     CKPT1 LDX   L1 /0000                              80A17040
0D40 1 6600 081E           LDX   L2 DST                                80A17050
0D42 0 C242                LD    2 PRDSW-DST                           80A17060
0D43 0 F246                EOR   2 K0100-DST                           80A17070
0D44 1 4C18 0D4B           BSC   L CKPT7,&-    BR IF PTR NOT CMPLT       80A17080
                     *                                                  80A17090
0D46 0 C242                LD    2 PRDSW-DST                           80A17100
0D47 0 4016                BSI     QLOG        SAVE STATUS               80A17110
0D48 0 40B6                BSI     SBANA       CHECK FOR ERROR           80A17120
                     *                                                  80A17130
0D49 1 4C80 0D3A     CKPT3 BSC   I CKPTR       RETURN                    80A17140
                     *                                                  80A17150
                     *                                                  80A17160
0D4B 1 74FF 0821     CKPT7 MDX   L WACNT,-1                            80A17170
0D4D 0 700D                MDX     CKPT8                                80A17180
0D4E 0 C0F0                LD      CKPT1&1                              80A17190
0D4F 0 1002                SLA     2                                    80A17200
0D50 0 D001                STO     *&1                                  80A17210
0D51 0 6500 0000           LDX   L1 /0000                              80A17220
0D53 0 0A43                XIO   2 SENSD-DST                           80A17230
0D54 0 EA46                OR    2 K0100-DST                           80A17240
0D55 0 40A9                BSI     SBANA       SAVE ERROR MESSAGE        80A17250
0D56 0 F246                EOR   2 K0100-DST                           80A17260
0D57 0 DA38                STD   2 DSWE-DST                            80A17270
0D58 0 10A0                SLT     32                                   80A17280
0D59 0 D900                STD   1 0                                   80A17290
0D5A 0 70EE                MDX     CKPT3                               80A17300
                     *                                                  80A17310
0D5B 1 6600 0D3E     CKPT8 LDX   L2 CKPT1      TRY AGAIN - LATER         80A17320
0D5D 0 7060                MDX     LOPGO                                80A17330
                     ********************************************       80A17340
                     *                                                  80A17350
                     *                                                  80A17360
                     *                  THE QULOG ROUTINE SAVES         80A17370
                     *                  LOG MESSAGES IN ORDER           80A17380
                     *                  RECEIVED  FOR OUTPUT AT         80A17390
                     *                  A LATER TIME.                   80A17400
                     *                                                  80A17410
                     *                  CALL **********************     80A17420
                     *                    * LDX  1 MSG ID NO    *       80A17430
                     *                    * BSI L  QLOG         *       80A17440
                     *                    **********************        80A17450
                     *                  AT ENTRY TIME                   80A17460
                     *                  ACC EQUALS MSG WANTED           80A17470
                     *                  XR1 EQUALS MSG ID NO            80A17480
                     *                                                  80A17490
                     *                                                  80A17500
                     *                  ACC IS SAVED                    80A17510
                     *                  XR1 IS MULTIPLIED BY FOUR       80A17520
                     *                                                  80A17530
                     *                                                  80A17540
0D5E 0 0000          QLOG  DC      /0000                               80A17550
0D5F 0 690F                STX   1 QLOG2&1                             80A17560
0D60 1 6500 0D74     QLOG1 LDX   L1 MSGAR&2                            80A17570
0D62 1 7402 0D61           MDX   L QLOG1&1,2 UPDATE STO AREA           80A17580
                     *                                                  80A17590
0D64 0 D101                STO   1 1           SAVE MESSAGE              80A17600
                     *                                                  80A17610
0D65 0 C009                LD      QLOG2&1     SET MESSAGE ID            80A17620
0D66 0 E82B                OR      KA000                                 80A17630
0D67 0 D100                STO   1 0                                   80A17640
0D68 0 1810                SRA     16          CLEAR NEXT MSGID          80A17650
0D69 0 D102                STO   1 2                                   80A17660
                     *                                                  80A17670
0D6A 0 C004                LD      QLOG2&1     SET XR1                   80A17680
                                                                       80A17690
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0D6B 0 1002              SLA     2                                  80A17700
0D6C 0 D002              STO     QLOG2&1                            80A17710
0D6D 0 C101              LD    1 1             RESTORE ACC          80A17720
0D6E 0 6500 0000   QLOG2 LDX   L1 /0000                            80A17730
                   *                                               80A17740
0D70 1 4C80 0D5E         BSC   I  QLOG          EXIT TO USER         80A17750
                   *                                               80A17760
0D72   0000              BSS   E  0                                 80A17770
0D72 0 0001        MSGAR DC       1             MODIFIER WORD COUNT  80A17780
0D73 0 0000              DC       0             HEX OUTPUT           80A17790
0D74 0 0000              DC       0             MESSAGE ID           80A17800
0D75 0 0000              DC       0             OBJECT DSW           80A17810
0D76   001C              BSS      28                                 80A17820
0D92 0 A000        KA000 DC       /A000         CONSTANT             80A17830
                   ********************************************     80A17840
                   *                                               80A17850
                   *                                               80A17860
                   *              LOG MESSAGE ROUTINE              80A17870
                   *                                               80A17880
                   *              THE LOGGING ROUTINE SETS         80A17890
                   *              UP AND LOGS MESSAGES             80A17900
                   *              PREVIOUSLY SAVED BY THE          80A17910
                   *              QLOG ROUTINE.                    80A17920
                   *                                               80A17930
0D93 0 0000        LOGIT DC       /0000                            80A17940
0D94 1 6700 0D74         LDX   L3 MSGAR&2       RESET QULOG AREA     80A17950
0D96 0 6BCA              STX     3 QLOG1&1                          80A17960
                   *                                               80A17970
0D97 0 C2E2              LD      2 RID-DST      CHECK IF FORCE LOG   80A17980
0D98 0 B250              CMP     2 K000C-DST                        80A17990
0D99 0 7019              MDX       QLUP1        NOT IN THIS ROUTINE  80A18000
0D9A 0 1000              NOP                                        80A18010
0D9B 0 C2E4              LD      2 SW0-DST                          80A18020
0D9C 0 1009              SLA       9                                80A18030
0D9D 1 4C10 0DB3         BSC   L  QLUP1,-       BR IF NOT LOG NOW    80A18040
                   *                                               80A18050
0D9F 1 C480 0E10         LD    I  GETAD                           80A18060
0DA1 1 4C88 0D93         BSC   I  LOGIT,&       BR IF NOT RELEASED   80A18070
                   *                                               80A18080
                   **********************  PRINT MESSAGE            80A18090
0DA3 0 4480 012F   LOG1  BSI   I  LOG                 *            80A18100
0DA5 1 0D72              DC       MSGAR         MSG   *            80A18110
0DA6 1 0DB9              DC       LOGBY         BUSY  *            80A18120
0DA7 1 0DAA              DC       QLUP          TERM  *            80A18130
                   ********************************               80A18140
0DA8 0 4C80 012D         BSC   I  START                             80A18150
                   *                                               80A18160
                   *                                               80A18170
0DAA 1 6700 0D76   QLUP  LDX   L3 MSGAR&4                          80A18180
0DAC 0 CB00              LDD     3 0                                80A18190
0DAD 1 4C10 0DB3         BSC   L  QLUP1,-       EXIT - NO MORE MSGS  80A18200
                   *                                               80A18210
0DAF 0 D8C4              STD      MSGAR&2       MOVE MSG FOR OUTPUT  80A18220
0DB0 1 7402 0DAB         MDX   L  QLUP&1,2                          80A18230
                   *                                               80A18240
0DB2 0 70F0              MDX      LOG1          GO LOG               80A18250
                   *                                               80A18260
0DB3 1 6700 0D76   QLUP1 LDX   L3 MSGAR&4       RESET CHECK AREA     80A18270
0DB5 0 6BF5              STX     3 QLUP&1                           80A18280
                   *                                               80A18290
0DB6 0 4063              BSI      HALT          CHECK IF HALT PROG   80A18300
                   *                                               80A18310
0DB7 1 4C80 0D93         BSC   I  LOGIT         RETURN TO USER       80A18320
                   *                                               80A18330
                   *                                               80A18340
0DB9 1 6600 0DA3   LOGBY LDX   L2 LOG1          TRY AGAIN - LATER    80A18350
0DBB 0 7002              MDX      LOPGO                             80A18360
                   *                                               80A18370
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0DBC 1 6600 0DE3   ERRBY LDX   L2 ERR5          TRY AGAIN - LATER    80A18380
0DBE 1 6E00 0809   LOPGO STX   L2 MLSCF                             80A18390
0DC0 0 4C80 012D         BSC   I  START                             80A18400
                   ********************************************     80A18410
                   *                                               80A18420
                   *                                               80A18430
                   *                                               80A18440
                   *                  LOG ERROR ROUTINE            80A18450
                   *                                               80A18460
                   *                  THE ERROR ROUTINE LOGS       80A18470
                   *                * ALL ERROR MESSAGES           80A18480
                   *                                               80A18490
                   *                                               80A18500
0DC2 0 0000        ERRIT DC       /0000                            80A18510
0DC3 0 402F              BSI      DROPD         RELEASE THE 1443     80A18520
0DC4 1 C480 0E10         LD    I  GETAD                           80A18530
0DC6 1 4C88 0DC2         BSC   I  ERRIT,&       BR IF NOT RELEASED   80A18540
                   *                                               80A18550
0DC8 0 6500 FFC8   ERR1  LDX   L1 -56          CHECK ERROR TABLE    80A18560
0DCA 0 10A0              SLT      32                                80A18570
0DCB 1 BD00 085A   ERR2  DCM   L1 DST&60                           80A18580
0DCD 0 1000              NOP      0                                 80A18590
0DCE 0 7008              MDX      ERR4          BR IF ENTRY FOUND    80A18600
0DCF 0 7104              MDX     1 4                                80A18610
0DD0 0 70FA              MDX      ERR2                              80A18620
                   *                                               80A18630
0DD1 0 C2E5              LD      2 SW1-DST                          80A18640
0DD2 0 F244              EOR     2 SWCMP-DST                        80A18650
0DD3 1 4C20 08E0         BSC   L  PCON,Z        BR IF SW1 CHANGED    80A18660
0DD5 1 4C80 0DC2         BSC   I  ERRIT         RETURN TO USER       80A18670
                   *                                               80A18680
0DD7 1 CD00 085A   ERR4  LDD   L1 DST&60        TRANSFER TO OUTPUT   80A18690
0DD9 0 D816              STD      EMESS&3                           80A18700
                   *                                               80A18710
0DDA 0 6914              STX     1 EMESS&2      BUILD MSG ID         80A18720
0DDB 0 C013              LD       EMESS&2                           80A18730
0DDC 0 8015              A        SIXTY                             80A18740
0DDD 0 1802              SRA      2                                 80A18750
0DDE 0 E80D              OR       KE000                             80A18760
0DDF 0 D00F              STO      EMESS&2                           80A18770
0DE0 0 10A0              SLT      32            RESTORE ERROR WORDS  80A18780
0DE1 1 DD00 085A         STD   L1 DST&60                           80A18790
0DE3 1 6600 081E   ERR5  LDX   L2 DST                             80A18800
                   **********************  PRINT ERROR              80A18810
0DE5 0 4480 0130         BSI   I  ERROR                 *          80A18820
0DE7 1 0DED              DC       EMESS         MSG   *            80A18830
0DE8 1 0DBC              DC       ERRBY         BUSY  *            80A18840
0DE9 1 0DEA              DC       *                   *            80A18850
                   ********************************               80A18860
0DEA 0 70DD              MDX      ERR1                              80A18870
0DEC   0000              BSS   E  0                                 80A18880
0DEC 0 E000        KE000 DC       /E000                            80A18890
0DED 0 0002        EMESS DC       2             MODIFIER WORD COUNT  80A18900
0DEE 0 0000              DC       0             HEX OUTPUT           80A18910
0DEF 0 E00F              DC       /E00F         MESSAGE ID           80A18920
0DF0 0 ED00              DC       /ED00         DSW                  80A18930
0DF1 0 0000              DC       0             DSW SHOULD BE        80A18940
0DF2 0 003C        SIXTY DC       60            CONSTANT             80A18950
                   ********************************************     80A18960
                   *                                               80A18970
                   *                                               80A18980
                   *                                               80A18990
                   *                                               80A19000
                   *                RELEASE DEVICE ROUTINE         80A19010
                   *                                               80A19020
0DF3 0 0000        DROPD DC       0                                80A19030
0DF4 1 C480 0E10         LD    I  GETAD                           80A19040
0DF6 1 4C10 0DFF         BSC   L  DRPED,-                         80A19050
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ODF8 0 C24E              LD    2 KEEP-DST
ODF9 1 4C20 0E02         BSC  L  DRPAD,Z    BR IF NO RELEASE NOW
                     ********** RELEASE DEVICE.
ODFB 0 4480 0132         BSI  I  RELDV           *
ODFD 1 0811          DRAD DC     DDEF1           *
ODFE 1 080A              DC      TERM            *
                     ******************************
ODFF 1 6600 0E02     DRPED LDX   L2 DRPAD
0E01 0 70BC               MDX    LOPGO
                     *
0E02 1 6600 081E     DRPAD LDX   L2 DST
0E04 1 4C80 0DF3          BSC  I  DROPD
                     ********************************************
                     *
                     *
                     *
                     *                  REQUEST DEVICE ROUTINE
                     *
0E06 0 0000          GETDE DC       0
0E07 1 C480 0E10           LD   I  GETAD
0E09 1 4C28 0E13           BSC  L  GOTIT,Z&
0E0B 1 7401 0877           MDX  L  INTSW,1    SET INTERRUPT SWITCH
                     ********** REQUEST DEVICE.
0E0D 0 4480 0131     GETRN BSI   I  REQDV           *
0E0F 1 0E17                DC      REXIT      BUSY *
0E10 1 0811          GETAD DC      DDEF1           *
0E11 1 0878                DC      DVA             *
0E12 1 080A                DC      TERM            *
                     ******************************
0E13 1 6600 081E     GOTIT LDX   L2 DST
0E15 1 4C80 0E06           BSC  I  GETDE
                     *
0E17 1 6600 0E0D     REXIT LDX   L2 GETRN
0E19 0 70A4               MDX    LOPGO
                     ********************************************
                     *
                     *
                     *
                     *                  PROGRAM HALT ROUTINE
                     *
                     *                  THIS ROUTINE CHECKS FOR
                     *                   PROGRAM HALT AND WILL
                     *                   RETURN TO MAINLINE ONLY
                     *                   WHEN EITHER PROGRAM HALT
                     *                   IS OFF OR WHEN BOTH
                     *                   PROGRAM HALT AND SINGLE
                     *                   CYCLE ARE SPECIFIED.
                     *
0E1A 0 0000          HALT  DC       /0000
0E1B 1 6600 081E     HALT1 LDX   L2 DST
0E1D 0 C2E4                LD    2 SWO-DST
0E1E 0 18D8                RTE     24
0E1F 1 4C90 0E1A           BSC  I  HALT,-     BR BACK IF NO HALT
                     *
0E21 0 18C1                RTE     1
0E22 1 4C10 0E29           BSC  L  HALT9,-    BR IF SINGLE CYCLE
0E24 1 4400 0DC2           BSI  L  ERRIT      CK IF END ROUTINE
                     *
0E26 1 6600 0E1B           LDX  L2 HALT1
0E28 0 7095                MDX     LOPGO
                     *
                     *
                     *
0E29 0 1001          HALT9 SLA      1           RESTORE FOR HALT
0E2A 0 1888                SRT     8
0E2B 0 D2E4                STO   2 SWO-DST
0E2C 1 4C80 0E1A           BSC  I  HALT        RETURN
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80A19060
80A19070
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80A19210
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80A19730
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                     ********************************************
                     *
                     *
                     *
                     *                  END OF PROGRAM ROUTINE
                     *
0E2E 0 0000          ENDIT DC       0
0E2F 1 6600 081E           LDX  L2 DST
0E31 0 C2E4                LD    2 SWO-DST
0E32 0 1009                SLA     9
0E33 0 1809                SRA     9
0E34 0 D2E4                STO   2 SWO-DST
0E35 1 C480 0E10           LD   I  GETAD
0E37 1 4C90 0E2E           BSC  I  ENDIT,-    BR IF 1443 RELEASED
                     ********** RELEASE DEVICE
0E39 0 4480 0132           BSI  I  RELDV           *
0E3B 1 0811          ENDAD DC      DDEF1           *
0E3C 1 080A                DC      TERM            *
                     ******************************
0E3D 1 4C80 0E2E           BSC  I  ENDIT
                     ********************************************
                     *
                     *
                     *
                     *                  EDIT ERROR END ROUTINE
                     *
0E3F 1 6500 0E45     DEND  LDX   L1 DEND1
0E41 0 6980                STX    1 ERRIT
0E42 1 74FF 0DED           MDX  L  EMESS,-1
0E44 0 709E                MDX     ERR5        PRINT EDIT ERROR
0E45 1 7401 0DED     DEND1 MDX  L  EMESS,1
                     *
0E47 0 4C80 012E           BSC  I  END         CALL END
                     ********************************************
                     *
                     *
                     *
                     *                  OUTPUT DATA TABLES
                     *
0E49 0 3239          BLINE DC       /3239       B I
0E4A 0 1300                DC       /1300       T
0E4B 0 2339                DC       /2339       L I
0E4C 0 2535                DC       /2535       N E
                     *
0E4D 0 0000          BILK  DC       /0000       BLANK
0E4E 0 2020                DC       /2020       MINUS
0E4F 0 1010                DC       /1010       PLUS
0E50 0 0808                DC       /0808       8
0E51 0 0404                DC       /0404       4
0E52 0 0202                DC       /0202       2
                     *
0E53 0 0101                DC       /0101       1
0E54 0 2731          PAR   DC       /2731       P A
0E55 0 2939                DC       /2939       R I
0E56 0 1318                DC       /1318       T Y
0E58    0000               BSS  E   0
0E58 0 8000          PARK  DC       /8000       BAD BLANK
0E59 0 0040                DC       /0040
0E5A 0 A000                DC       /A000       MINUS
0E5B 0 0060                DC       /0060
0E5C 0 9000                DC       /9000       PLUS
0E5D 0 0050                DC       /0050
0E5E 0 8800                DC       /8800       8
0E5F 0 0048                DC       /0048
0E60 0 8400                DC       /8400       4
0E61 0 0044                DC       /0044
0E62 0 8200                DC       /8200       2
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80A19740
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80A19990
80A20000
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80A20360
80A20370
80A20380
80A20390
80A20400
80A20410
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0E63 0 0042              DC     /0042                          80A20420
0E64 0 8100              DC     /8100          1               80A20430
0E65 0 0041              DC     /0041                          80A20440
                  *                                           80A20450
0E66 0 0000       BLANK  DC     /0000                          80A20460
                  *                                           80A20470
0E67 0 3318       CSTEL  DC     /3318          C Y             80A20480
0E68 0 3323              DC     /3323          C L             80A20490
0E69 0 3500              DC     /3500          E               80A20500
0E6A 0 1213              DC     /1213          S T             80A20510
0E6B 0 3531              DC     /3531          E A             80A20520
0E6C 0 2300              DC     /2300          L               80A20530
                  *                                           80A20540
0E6D 0 2739              DC     /2739          P I             80A20550
0E6E 0 3322              DC     /3322          C K             80A20560
0E6F 0 2014              DC     /2014          - U             80A20570
0E70 0 2700              DC     /2700          P               80A20580
                  *                                           80A20590
0E71 0 3429       DROP   DC     /3429          D R             80A20600
0E72 0 2627              DC     /2627          O P             80A20610
                  *                                           80A20620
0E73 0 0009       CSE08  DC     /0009            9             80A20630
0E74 0 000A       CSE09  DC     /000A            0             80A20640
0E75 0 0001              DC     /0001            1             80A20650
0E76 0 0002              DC     /0002            2             80A20660
0E77 0 0003              DC     /0003            3             80A20670
0E78 0 0004              DC     /0004            4             80A20680
0E79 0 0005              DC     /0005            5             80A20690
0E7A 0 0006              DC     /0006            6             80A20700
0E7B 0 0007              DC     /0007            7             80A20710
0E7C 0 0008              DC     /0008            8             80A20720
0E7D 0 0009              DC     /0009            9             80A20730
                  *                                           80A20740
0E7E 0 1626       WCCOR  DC     /1626          W O             80A20750
0E7F 0 2912              DC     /2912          R S             80A20760
0E80 0 1300              DC     /1300          T               80A20770
0E81 0 3331              DC     /3331          C A             80A20780
0E82 0 1235              DC     /1235          S E             80A20790
0E83 0 0033              DC     /0033            C             80A20800
0E84 0 2629              DC     /2629          O R             80A20810
0E85 0 3500              DC     /3500          E               80A20820
                  *                                           80A20830
0E86 0 3100       WCCA   DC     /3100          A               80A20840
0E87 0 3200       WCCB   DC     /3200          B               80A20850
                  *                                           80A20860
0E88 0 2A2A       AWORK  DC     /2A2A          # #             80A20870
0E89 0 2A15              DC     /2A15          # V             80A20880
0E8A 0 2A2A              DC     /2A2A          # #             80A20890
0E8B 0 152A              DC     /152A          V #             80A20900
0E8C 0 1515              DC     /1515          V V             80A20910
0E8D 0 152A              DC     /152A          V #             80A20920
0E8E 0 1515              DC     /1515          V V             80A20930
0E8F 0 2A15              DC     /2A15          # V             80A20940
                  *                                           80A20950
0E90 0 3838       BWORK  DC     /3838          H H             80A20960
0E91 0 3807              DC     /3807          H 7             80A20970
0E92 0 3838              DC     /3838          H H             80A20980
0E93 0 0738              DC     /0738          7 H             80A20990
0E94 0 0707              DC     /0707          7 7             80A21000
0E95 0 0738              DC     /0738          7 H             80A21010
0E96 0 0707              DC     /0707          7 7             80A21020
0E97 0 3807              DC     /3807          H 7             80A21030
                  *                                           80A21040
0E98 0 3525       EOT    DC     /3525          E N             80A21050
0E99 0 3400              DC     /3400          D               80A21060
0E9A 0 2636              DC     /2636          O F             80A21070
0E9B 0 0013              DC     /0013            T             80A21080
0E9C 0 3512              DC     /3512          E S             80A21090
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0E9D 0 133B              DC     /133B    T .                   80A21100
                  *                                           80A21110
                  *                                           80A21120
0E9E 0 0000       ALPHA  DC     /0000    BLANK                 80A21130
0E9F 0 0102              DC     /0102    1   2                 80A21140
0EA0 0 0304              DC     /0304    3   4                 80A21150
0EA1 0 0506              DC     /0506    5   6                 80A21160
0EA2 0 0708              DC     /0708    7   8                 80A21170
0EA3 0 090A              DC     /090A    9   0                 80A21180
0EA4 0 0000              DC     /0000    BLANK                 80A21190
0EA5 0 0031              DC     /0031        A                 80A21200
0EA6 0 3233              DC     /3233    B   C                 80A21210
0EA7 0 3435              DC     /3435    D   E                 80A21220
0EA8 0 3637              DC     /3637    F   G                 80A21230
0EA9 0 3839              DC     /3839    H   I                 80A21240
0EAA 0 2122              DC     /2122    J   K                 80A21250
0EAB 0 2324              DC     /2324    L   M                 80A21260
0EAC 0 2526              DC     /2526    N   O                 80A21270
0EAD 0 2728              DC     /2728    P   Q                 80A21280
0EAE 0 2912              DC     /2912    R   S                 80A21290
0EAF 0 1314              DC     /1314    T   U                 80A21300
0EB0 0 1516              DC     /1516    V   W                 80A21310
0EB1 0 1718              DC     /1718    X   Y                 80A21320
0EB2 0 1900              DC     /1900    Z   BLANK             80A21330
0EB3 0 0000              DC     /0000    BLANK                 80A21340
0EB4 0 1030              DC     /1030    &   AMP               80A21350
0EB5 0 2011              DC     /2011    -   /                 80A21360
0EB6 0 1A3A              DC     /1A3A    PCT LOS               80A21370
0EB7 0 2A0B              DC     /2A0B    NOS #                 80A21380
0EB8 0 1B3B              DC     /1B3B    ,   .                 80A21390
0EB9 0 2B0C              DC     /2B0C    $   AT                80A21400
0EBA 0 1C3C              DC     /1C3C    %   ¤                 80A21410
0EBB 0 2C0D              DC     /2C0D    *   APOSTROPHE        80A21420
0EBC 0 1D3D              DC     /1D3D    UDR CNT               80A21430
0EBD 0 2D0E              DC     /2D0E    EXC GTR               80A21440
0EBE 0 1E3E              DC     /1E3E    COL LES               80A21450
0EBF 0 2E0F              DC     /2E0F    SMI QST               80A21460
0EC0 0 1F3F              DC     /1F3F    QTE OR                80A21470
0EC1 0 2F00              DC     /2F00    NOT BLANK             80A21480
                  *                                           80A21490
0EC2 0 3020       STRSS  DC     /3020    &   -                 80A21500
0EC3 0 0111              DC     /0111    1   /                 80A21510
0EC4 0 3121              DC     /3121    A   J                 80A21520
0EC5 0 0212              DC     /0212    2   S                 80A21530
0EC6 0 3222              DC     /3222    B   K                 80A21540
0EC7 0 0313              DC     /0313    3   T                 80A21550
0EC8 0 3323              DC     /3323    C   L                 80A21560
0EC9 0 0414              DC     /0414    4   U                 80A21570
0ECA 0 3424              DC     /3424    D   M                 80A21580
0ECB 0 0515              DC     /0515    5   V                 80A21590
0ECC 0 3525              DC     /3525    E   N                 80A21600
0ECD 0 0616              DC     /0616    6   W                 80A21610
0ECE 0 3626              DC     /3626    F   O                 80A21620
0ECF 0 0717              DC     /0717    7   X                 80A21630
0ED0 0 3727              DC     /3727    G   P                 80A21640
0ED1 0 0818              DC     /0818    8   Y                 80A21650
0ED2 0 3828              DC     /3828    H   Q                 80A21660
0ED3 0 0919              DC     /0919    9   Z                 80A21670
0ED4 0 3929              DC     /3929    I   R                 80A21680
0ED5 0 0A1A              DC     /0A1A    0   %                 80A21690
0ED6 0 3A2A              DC     /3A2A    ¤   #                 80A21700
0ED7 0 0B1B              DC     /0B1B    #   ,                 80A21710
0ED8 0 3B2B              DC     /3B2B    .   $                 80A21720
0ED9 0 0C1C              DC     /0C1C    ,   ¤                 80A21730
0EDA 0 3C2C              DC     /3C2C    ¤   *                 80A21740
0EDB 0 0D1D              DC     /0D1D    ,   &                 80A21750
                  *                                           80A21760
0EDC 0 3338       CHARC  DC     /3338    C H                   80A21770
```

```
0EDD 0 3129            DC    /3129   A R                    80A21780
0EDE 0 3133            DC    /3133   A C                    80A21790
0EDF 0 1335            DC    /1335   T E                    80A21800
0EE0 0 2900            DC    /2900   R                      80A21810
0EE1 0 3326            DC    /3326   C O                    80A21820
0EE2 0 2427            DC    /2427   M P                    80A21830
0EE3 0 2339            DC    /2339   L I                    80A21840
0EE4 0 2435            DC    /2435   M E                    80A21850
0EE5 0 2513            DC    /2513   N T                    80A21860
                       *                                    80A21870
0EE6 0 2935      REGIS DC    /2935   R E                    80A21880
0EE7 0 3739            DC    /3739     G   I                80A21890
                       *                                    80A21900
0EE8 0 1213            DC    /1213   S T                    80A21910
0EE9 0 2931            DC    /2931   R A                    80A21920
0EEA 0 1339            DC    /1339   T I                    80A21930
0EEB 0 2625            DC    /2625   O N                    80A21940
                       *                                    80A21950
0EEC 0 3838      AITCH DC    /3838   H H                    80A21960
                       *                                    80A21970
0EED 0 1213      STRES DC    /1213   S T                    80A21980
0EEE 0 2935            DC    /2935   R E                    80A21990
0EEF 0 1212            DC    /1212   S S                    80A22000
                       *                                    80A22010
0EF0 0 1222      SKAP  DC    /1222     S   K                80A22020
0EF1 0 3927            DC    /3927     I   P                80A22030
0EF2 0 0031      AFTER DC    /0031         A                80A22040
0EF3 0 3613            DC    /3613     F   T                80A22050
0EF4 0 3529            DC    /3529     E   R                80A22060
0EF5 0 0027            DC    /0027         P                80A22070
0EF6 0 2939            DC    /2939     R   I                80A22080
0EF7 0 2513            DC    /2513                          80A22090
                       *                                    80A22100
0EF8 0 1222      SKIM  DC    /1222       SKIP IMMEDIATE     80A22110
0EF9 0 3927            DC    /3927                          80A22120
0EFA 0 0039            DC    /0039                          80A22130
0EFB 0 2424            DC    /2424                          80A22140
0EFC 0 3534            DC    /3534                          80A22150
0EFD 0 3931            DC    /3931                          80A22160
0EFE 0 1335            DC    /1335                          80A22170
                       *                                    80A22180
0EFF 0 3535      E     DC    /3535                          80A22190
                       *                                    80A22200
0F00 0 1227      SPIM  DC    /1227       SPACE IMMECIATE    80A22210
0F01 0 3133            DC    /3133                          80A22220
0F02 0 3500            DC    /3500                          80A22230
0F03 0 3924            DC    /3924                          80A22240
0F04 0 2435            DC    /2435                          80A22250
0F05 0 3439            DC    /3439                          80A22260
0F06 0 3113            DC    /3113                          80A22270
0F07 0 3500            DC    /3500                          80A22280
                       *                                    80A22290
0F08 0 3338      CNNL  DC    /3338       CHANNEL            80A22300
0F09 0 3125            DC    /3125                          80A22310
0F0A 0 2535            DC    /2535                          80A22320
0F0B 0 2300            DC    /2300                          80A22330
0F0C 0 0000            DC    /0000                          80A22340
0F0D 0 0000            DC    /0000                          80A22350
                       *                                    80A22360
0F0E 0 1227      SPCC  DC    /1227       SPACE              80A22370
0F0F 0 3133            DC    /3133                          80A22380
0F10 0 3500            DC    /3500                          80A22390
0F11 0 0000            DC    /0000                          80A22400
0F12 0 0000            DC    /0000                          80A22410
0F13 0 0000            DC    /0000                          80A22420
                       *                                    80A22430
                       *                                    80A22440
0F14   0093      BITS  BSS   147         1443 OUTPUT AREA   80A22450
```



```
                       *                                    80A22460
                       ********** BEGIN ROUTINE.            80A22470
0FA7 0 4480 012C PRCUS BSI  I  BEGIN          *             80A22480
0FA9 1 07FF            DC      PID                          80A22490
                       ********************************     80A22500
                       *                        PATCH AREA  80A22510
0FAA   0000            BSS  E  0                            80A22520
0FFD                   ORG     /7FE&PID                     80A22530
0FFD 0 0000      PEND  DC      0                            80A22540
0FFE   0FA7            END     PRCUS                        80A22550
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

```
AFTER   0EF2  0AF9
AGAIN   0894  0806 0807 08A7
AGIN1   0897  089A
AGIN2   089C  089F
AITCH   0EEC  0A52 0A5B
ALL     086B  08EC
ALPHA   0E9E  0A3B
AWORK   0E88  0A17
BAR     0814
BASIC   086A  08EB
BEGIN   012C  0FA7
BILK    0E4D  0965
BITS    0F14  085C 0912 0918 0933 0969 0A1B 0A3F 0A56 0A5B 0A7A 0A7D 0A9D 0AA0
              0AB5 0AE7 0B23 0B43 0B4E 0B50 0B58 0B85 0B93 0B95 0B9D 0BCC 0BFD
              0C28 0C2B 0C35 0C37 0C3A 0C3F 0C44 0C48 0C4A 0C4C 0CBD 0CC0 0CC3
              0CD1 0CD7 0CED 0CFB
BLANK   0E66  08FF 0996 0C10
BLINE   0E49  095E
BLNCT   0995  098B 09B7
BWORK   0E90  0A2E
CHAN    0BAC  0B3F 0B48 0B4C 0B55 0B5D 0B61 0BDA
CHAN1   0BAF  0BD9
CHARC   0EDC  0A34
CKPTR   0D3A  0923 093C 0950 0979 09A6 09D4 0A02 0A72 0A90 0ADB 0B15 0BC6 0BEE
              0C8B 0CA1 0D49
CKPT1   0D3E  0D4E 0D5B
CKPT3   0D49  0D5A
CKPT7   0D4B  0D44
CKPT8   0D5B  0D4D
CKXFR   0D14  0976 09A3 09D1 09F6 0A6F 0A8D 0AD8 0B12 0BC3 0BEB 0C88 0D24
CKXF1   0D19  0D29 0D36
CKXF3   0D24  0D35
CKXF7   0D26  0D1F
CKXF8   0D36  0D28
CNNL    0F08  0C1A
CNTRL   085A  08D7 094B 0AC4 0AE4 0AE6 0AFE 0B20 0B22 0B3B 0B6D 0B72 0BA4 0BCE
              0BD0 0BFF 0C01 0C80 0C99
COMP    0810
CSE08   0E73  09C9
CSE09   0E74  09EE
CSTEL   0E67  09C2 09E2
CYCNT   0820  08E7 092D 0942 0956 096C 097F 098F 09B2 09DA 0A08 0A42 0A55 0A96
              0AB8 0ACA 0AEC 0B04 0B29
DDEF1   0811  08C6 08CB 0DFD 0E10 0E3B
DDEF2   0812  08C0 08C3
DECX0   0CF7  0CF0
DEND    0E3F  08C7
DEND1   0E45  0E3F
DRAD    0DFD  08CF
DROP    0E71  09E7
DROPD   0DF3  08DE 090B 0A76 0C8D 0DC3 0E04
DRPAD   0E02  0DF9 0DFF
DRPED   0DFF  0DF6
DST     081E  081E 089C 088A 08BC 08C0 08C6 08D5 08D6 08D7 08D8 08D9 08DA 08DB
              08DC 08DD 08E0 08E9 08EA 08EB 08EC 08ED 08F0 08F9 091A 091B 091C
              0925 0928 094A 094B 0967 098A 098E 098F 09AD 09F8 09FB 09FE 0A00
              0A19 0A3D 0A42 0A4D 0A54 0A55 0A60 0A64 0A66 0A67 0A68 0A7C 0A82
              0A83 0A86 0A9F 0AB3 0AB8 0AC3 0AC4 0AC5 0AC6 0AC9 0ACA 0ACB 0AE4
              0AE5 0AE6 0AEB 0AFD 0AFE 0AFF 0B00 0B03 0B04 0B05 0B20 0B21 0B22
              0B27 0B28 0B3A 0B3B 0B4D 0B56 0B57 0B6C 0B6D 0B71 0B72 0B92 0B9B
              0B9C 0BA3 0BA4 0BB8 0BB9 0BBA 0BBE 0BC1 0BCE 0BCF 0BD0 0BF3 0BFF
              0C00 0C01 0C12 0C13 0C27 0C2A 0C30 0C47 0C55 0C56 0C59 0C5C 0C60
              0C6A 0C7F 0C80 0C96 0C97 0C98 0C99 0C9A 0CAD 0CAE 0CAF 0CB0 0CB1
              0D00 0D03 0D05 0D0D 0D0E 0D15 0D17 0D1B 0D1D 0D1E 0D21 0D2E 0D2F
              0D31 0D32 0D3B 0D3C 0D40 0D42 0D43 0D46 0D53 0D54 0D56 0D57 0D97
              0D98 0D9B 0DCB 0DD1 0DD2 0DD7 0DE1 0DE3 0DF8 0E02 0E13 0E1B 0E1D
              0E2B 0E2F 0E31 0E34
DSWA    0846
```



```
DSWB    084A
DSWC    084E  088F
DSWD    0852  0A00 0D32
DSWE    0856  0D57
DSW1    0822
DSW2    0826
DSW3    082A
DSW4    082E
DSW5    0832  0AC9 0AEB 0B03 0B27
DSW6    0836
DSW7    083A  0BAF 0BDF
DSW8    083E
DSW9    0842  09F8 09FB 09FE
DVA     0878  08D6 0E11
E       0EFF  0C25
EIGHT   0A21
EMESS   0DED  0DD9 0DDA 0DDB 0DDF 0DE7 0E42 0E45
END     012E  08C9 090D 0E47
ENDAD   0E3B  08D1
ENDIT   0E2E  0808 0E37 0E3D
EOT     0E98  0904
EPARK   09BE  09BA
ERRBY   0DBC  0DE8
ERRIT   0DC2  0929 093E 0952 097B 09A8 09D6 0A04 0A92 0ADD 0B17 0BC8 0BF9 0C6B
              0CA3 0DC6 0DD5 0E24 0E41
ERROR   0130  0DE5
ERR1    0DC8  0DEA
ERR2    0DCB  0DD0
ERR4    0DD7  0DCE
ERR5    0DE3  0DBC 0E44
FIVE2   0ABB  0AB7
FORMS   0C95  094D 0AD2 0B0C 0B6F 0BB5 0BE5 0C82 0CAA
GET     0CE9  0CE4 0CF8
GETAD   0E10  08CD 0D9F 0DC4 0DF4 0E07 0E35
GETDE   0E06  08D3 0C57 0E15
GETRN   0E0D  0E17
GOTIT   0E13  0E09
HALT    0E1A  0DB6 0E1F 0E2C
HALT1   0E1B  0E26
HALT9   0E29  0E22
HDNG    0C7B  0906 0960 098C 09C4 09E9 0A12 0A29 0A36 0A4B 0AAC 0AC1 0AFB 0B33
              0C93
IMSP1   0874  0AC3
INTRE   088E  0881 0889
INTRP   0879  0892
INTRR   0890  088D
INTRX   0892  0885
INTR1   0886  087C
INTSW   0877  0891 0E0B
KA000   0D92  0D66
KEEP    086C  08A0 0A64 0A82 0C6A 0DF8
KE000   0DEC  0DDE
K000C   086E  0D98
K0100   0864  0880 0888 08D8 0AE5 0B21 0B3A 0B4D 0B56 0B92 0B9B 0BCF 0C00 0C96
              0CAD 0D15 0D1E 0D2F 0D31 0D43 0D54 0D56
K0200   0865  08DA
K0400   0863  08D5 0C55 0D3B
LAST    08B9  086B
LOG     012F  0DA3
LOGBY   0DB9  0DA6
LOGIT   0D93  092B 0940 0954 097D 09AA 09D8 0A06 0A94 0ADF 0B19 0BCA 0BFB 0C6D
              0CA5 0DA1 0DB7
LOG1    0DA3  0DB2 0DB9
LOPGO   0DBE  0C79 0D38 0D5D 0DBB 0E01 0E19 0E28
LXR1    0CE5  0CF9
LXR2    0CDF  0CDE
MASK    0869  08ED
MLSCF   0809  08A3 0DBE
```

```
MOVE    0C2F  0ACC 0B06 0B1E 0BD1 0BD2 0BD3 0BD4 0C02 0C03 0C04 0C05 0C4E
MOVE4   0C47  0C3D
MOVE5   0C4C  0C42
MOVE6   0C4E  0C46
MSGAR   0D72  0897 08E2 0C8F 0D60 0D94 0DA5 0DAA 0DAF 0DB3
ONE     0868  08DC 091A 0AC5 0AFF 0B57 0B9C 0C2A
ONECH   086D  0A7C 0A9F
ONLIN   080F  0A61 0A74
PACNT   099B  0992 09AC 09AE 09B9
PAR     0E54  0987
PARK    0E58  0990 09BE
PCON    08E0  0930 0945 0959 0982 09B5 09DD 0A0B 0A99 0AEF 0B2C 0B62 0BAA 0DD3
PEND    0FFD  080B
PID     07FF  0FA9
PRCUS   0FA7  0FFE
PRDSW   0860  0887 088C 0C97 0CAE 0D42 0D46
PRINT   0CAC  0920 0939 0973 09A0 09CE 09F3 0A6C 0A8A 0AD5 0B0F 0BBC 0BE8 0C85
              0CB7
PTRDY   0C50  0909 091E 0936 0948 0971 099E 09CC 09F1 0A6A 0A88 0ACF 0B09 0B6A
              0BB2 0BE2 0BF1 0C75 0C7D 0CA8
PTRY1   0C55  0C6F
PTRY2   0C5C  0C77
PTRY3   0C5E  0C54
PTRY4   0C70  0C51 0C52 0C64
PTRY9   0C77  0C68
PUT     0CEB  0CD3 0CD9 0CDA
QLOG    0D5E  0BF5 0C5A 0C72 0C9C 0CB3 0D22 0D47 0D70
QLOG1   0D60  08E4 0C91 0D62 0D96
QLOG2   0D6E  0D5F 0D65 0D6A 0D6C
QLUP    0DAA  0DA7 0DB0 0DB5
QLUP1   0DB3  0D99 0D9D 0DAD
RAD     0801  08F9
REGIS   0EE6  0A49
RELDV   0132  0DFB 0E39
REQDV   0131  0E0D
REXIT   0E17  0E0F
RID     0800  08A5 08F0 08F1 08F5 0C12 0D97
ROTA    0CB9  096E 0AA4 0CCA
ROTA1   0CC0  0CC7
ROTA2   0CC8  0CBA
RPCNT   081F  0ACB 0AE1 0B05 0B1B 0B28 0BAD 0BD7 0BDD 0C07
RSTWC   0CFA  0CD5
RTABL   08A9  086B 08F7 08FA
RTZ     090F  08A9 092F
RTZZZ   08FC  08B9
RTZ1    0912  0915
RT0A    0A46  08B3
RT0AA   0A60  0AA6
RT0AB   0A7A  0A80
RT0AC   0A9D  0AA3
RT0AD   0A9B  0A98
RT0AI   0A51  0A4E
RT0AJ   0A5E  0A5A
RT0B    0AA7  08B4
RT0C    0ABC  08B5
RT0C3   0ACB  0AE3 0AEE
RT0D    0AF1  08B6
RT0D3   0B05  0B1D
RT0D4   0B08  0B2B
RT0E    0B2E  08B7
RT0F    0B64  08B8
RT01    0932  08AA
RT01A   0935  0944
RT02    0947  08AB 0958
RT03    095B  08AC
RT03A   096E  0981 0A1D 0A43 0AB9
RT04    0984  08AD
RT04C   09B7  09B4
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RT05    09BF  08AE
RT05A   09CB  09DC
RT06    09DF  08AF
RT06A   09F0  0A0A
RT07    0A0D  08B0
RT07B   0A19  0A30
RT08    0A1F  08B1
RT09    0A31  08B2
RT4I3   0990  09BD
SBANA   0CFF  0BF7 0C61 0C9E 0CB5 0D0A 0D12 0D23 0D30 0D48 0D55
SBANQ   0866  0D03 0D05 0D0E
SEBIT   0CCC  08FC 0901 095B 0962 0984 0993 0998 09BF 09C6 09DF 09E4 09EB 0A0D
              0A14 0A1F 0A24 0A2B 0A31 0A38 0A46 0A4F 0AA7 0AAE 0ABC 0AF1 0AF6
              0B2E 0B64 0C0D 0C17 0C1D 0C22 0CCF
SEBOT   0CF1  0CCD 0CCE
SENSD   0861  087A 08DD 0BF3 0D2E 0D53
SENSQ   085F  08DB 0C59 0C60 0C9A 0CB1
SETIT   0C0C  0AC7 0B01 0B35 0B40 0B77 0B7F 0C2D
SETPA   0993  09B1 09BB
SETT1   0C1D  0C15
SETT2   0C22  0C1C
SHAN    0BDC  0B76 0B7E 0B89 0B8D 0B91 0B9A 0BA2 0BA8 0C0A
SHAN1   0BDF  0C09
SIXTY   0DF2  0DDC
SIX8    0A45  0A41
SIZE    0813  0967 098E 0A19 0A3D 0A4D 0A54 0AB3
SKAP    0EF0  0B67
SKIM    0EF8  0B31
SLASH   0875  0C27 0C47
SPAC1   086F  094A
SPAC2   0870
SPAC3   0871  0B6C 0C7F
SPCC    0F0E  0C20
SPIM    0F00  0ABF 0AF4
START   012D  0DA8 0DC0
STARX   08BA  08A1
STAR1   08C6  08BE 08C1
STAR2   08CD  08C5
STEP    0876  0AC6 0AE9 0B00 0B25 0B38 0B7A 0B82 0C30
STOLX   0CDE  0CFE
STRES   0EED  0AAA
STRSS   0EC2  0AB1
SWCMP   0862  08EA 0DD2
SW0     0802  0D9B 0E1D 0E2B 0E31 0E34
SW1     0803  08E9 0DD1
SW2     0804  08BC
SW3     0805
TERM    080A  098A 09AD 0A60 0A66 0BB8 0C13 0CE2 0D0D 0DFE 0E12 0E3C
WACNT   0821  0C56 0C66 0D17 0D26 0D3C 0D4B
WCCA    0E86
WCCB    0E87  0A27
WCCOR   0E7E  0A10 0A22
WRITE   085C  08D9 091B 091C 0925 0928 0A67 0A68 0A83 0A86 0BB9 0BBA 0BBE 0BC1
              0CB0
WRSK1   0873  0B71 0BA3
WRSP1   0872  0AFD
XFDSW   085E  087F 0884 0C98 0CAF 0D1D 0D21
END OF ASSEMBLY
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