IDENTIFICATION

PRODUCT CODE:	DEC-11-YPTC-D
PRODUCT NAME:	TC11 DECTAPE FORMATTER
DATE CREATED:	JANUARY 22, 1972
MAINTAINER:	COMPUTER SPECIAL SYSTEMS
AUTHOR:	ROBERT J. COLLINS

1.0 ABSTRACT

The TC11 DECtape Formatter is a program for marking DECtapes on Unit 0 with a standard format of 578_{10} blocks of 256_{10} words each.

2.0 REQUIREMENTS

A. Minimum configuration PDP-11

B. TC11 DECtape control and at least one transport.

C. DECtape(s)

3.0 LOADING PROCEDURE

The normal procedure for loading Absolute Binary tapes should be followed.

4.0 PRELIMINARY OPERATIONS

A. Mount a DECtape on Unit 0, wrapping enough turns to insure tension.

B. Set the transport On-line with Write Enable on.

C. Set the TC11 WALL and WRTM switches (up).

5.0 STARTING PROCEDURE

Load address 600_8 and press START.

6.0 OPERATING PROCEDURE

A. Once started the program writes all Timing and Mark Track information in one forward pass and then halts at address 1050_8.

B. If the tape has run off the reel, remount it. Reset the WRTM switch (down) and press CONTINUE. The tape will back out for three blocks, then turn around and write the complement obverse of the last block number ($11Ø1_8$) in Writeall in all data slots until the End Zone is sensed. The tape then reverses and writes relevant information in all blocks down through Ø in Writeall.

C. The tape then reverses and alternately searches for each block number in sequence then changes to Readall to check each block for correct data (Ø's).

D. After all blocks have been verified forward, the tape is reversed again and alternately searches for each block number in reverse sequence then writes each block to Ø's in Write Data mode. This insures parity conservation if the tape is to be read before being rewritten.

E. The program then halts at address 2316_8. To format another tape, perform the operations in section 4.Ø then press CONTINUE.

7.Ø ERRORS

7.1 ERROR HALT

Address $3Ø12_8$ is the common error halt. Press CONTINUE to proceed from it.

7.2 ERROR SWITCHES

SR15(1) Inhibit error halt

SR14(1) Inhibit error printout

7.3 ERROR PRINTOUTS

Error printouts consist of:

A. Address of error.

B. Address of subroutine call if error is in a subroutine.

C. Processor status at time of error.

D. An error message.

E. Optional relevant data (Good, Bad, etc.)

```
                                ;TOG-11  V.03
                                ;TC11 DECTAPE FORMATTER
                                ;ROBERT J. COLLINS
                                ;JUNE 27, 1970
                                ;MODIFIED MAY 12,1971
                                ;MODIFIED JANUARY 22,1972

                                ;FORMAT DECTAPES ON UNIT 0 IN STANDARD FORMAT OF
                                ;578(10) BLOCKS WITH 256(10) 16 BIT WORDS PER BLOCK.
        000000                  R0=%0                   ;REGISTER DEFINITIONS
        000001                  R1=%1
        000002                  R2=%2
        000003                  R3=%3
        000004                  R4=%4
        000005                  R5=%5
        000006                  R6=%6
        000007                  R7=%7
        000006                  SP=R6
        000007                  PC=R7
        000000                  XX=HALT
        177570                  SR=177570               ;SWITCH REGISTER
        177776                  PS=177776               ;PROCESSOR STATUS
        177776                  CC=PS
        000240                  NOP=240
        000000                  P0=0                    ;PI PRIORITY LEVELS
        000040                  P1=40
        000100                  P2=100
        000140                  P3=140
        000200                  P4=200
        000240                  P5=240
        000300                  P6=300
        000340                  P7=340
        000001                  B0=1                    ;BIT POSITION CONSTANTS
        000002                  B1=2
        000004                  B2=4
        000010                  B3=10
        000020                  B4=20
        000040                  B5=40
        000100                  B6=100
        000200                  B7=200
        000400                  B8=400
        001000                  B9=1000
        002000                  B10=2000
        004000                  B11=4000
        010000                  B12=10000
        020000                  B13=20000
        040000                  B14=40000
        100000                  B15=100000
        005726                  POP=5726                        ;POP STACK ONCE,=TST(6)+
        022626                  POPPOP=22626                    ;POP STACK TWICE,=CMP (6)+,(6)+
        000015                  CR=15                           ;CARRIAGE RETURN
        000012                  LF=12                           ;LINE FEED
        177560                  TKS=177560                      ;KEYBOARD STATUS
        177562                  TKB=177562                      ;KEYBOARD BUFFER
        177564                  TPS=177564                      ;TELEPRINTER STATUS
        177566                  TPB=177566                      ;TELEPRINTER BUFFER
        000060                  TKV=60                          ;KEYBOARD VECTOR
        000064                  TPV=64                          ;TELEPRINTER VECTOR
        177342                  TCCM=177342
        177340                  TCST=177340
        177350                  TCDT=177350
        177346                  TCBA=177346
        177344                  TCWC=177344
        104000                  ERR=EMT
        104400                  ERS=TRAP
        000002                  GB=B1
        000004                  ST=B2
        000010                  DA=B3
        000020                  BK=B4
        000040                  VC=B5
```

```
                        .MACR   AND A,B
                        BIC     #=A=1,B             ;MASK A APPLIED TO B
                        .ENDM


                        .MACR   ROTR A
                        JSR     PC,RTR              ;ROTATE R0 A PLACES RIGHT
                        .WORD   A
                        .ENDM

                        .MACR   ROTL A
                        JSR     PC,RTL              ;ROTATE R0 A PLACES LEFT
                        .WORD   A
                        .ENDM

                        .MACR   LOOP    A,B
                        JSR     PC,LERCHKA          ;LOOP TO A ON  ERROR IF SR13=1
                        JMP     A
                B:      JSR     PC,LUPCHK           ;LOOP TO A IF SR12=1
                        JMP     A
                        .ENDM

                        .MACR   PNTM A
                        MOV     #A,R0               ;PRINT MESSAGE
                        JSR     PC,TYPOUT           ;POINTED TO BY A
                        .ENDM
```

```
         ØØØØØØ                    .=Ø

         ØØØ14Ø                    .REPT   14Ø
                                   .+2
                                   20367             ;SET TRACE BIT WITH A DUMMY COMPARE
                                   .ENDR
ØØØØØØ   ØØØØØ2                    .+2
ØØØØØ2   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØØ4   ØØØØØ6                    .+2
ØØØØØ6   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ1Ø   ØØØØ12                    .+2
ØØØØ12   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ14   ØØØØ16                    .+2
ØØØØ16   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ2Ø   ØØØØ22                    .+2
ØØØØ22   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ24   ØØØØ26                    .+2
ØØØØ26   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ3Ø   ØØØØ32                    .+2
ØØØØ32   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ34   ØØØØ36                    .+2
ØØØØ36   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ4Ø   ØØØØ42                    .+2
ØØØØ42   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ44   ØØØØ46                    .+2
ØØØØ46   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ5Ø   ØØØØ52                    .+2
ØØØØ52   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ54   ØØØØ56                    .+2
ØØØØ56   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ6Ø   ØØØØ62                    .+2
ØØØØ62   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ64   ØØØØ66                    .+2
ØØØØ66   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ7Ø   ØØØØ72                    .+2
ØØØØ72   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØØ74   ØØØØ76                    .+2
ØØØØ76   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ1ØØ   ØØØ1Ø2                    .+2
ØØØ1Ø2   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ1Ø4   ØØØ1Ø6                    .+2
ØØØ1Ø6   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ11Ø   ØØØ112                    .+2
ØØØ112   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ114   ØØØ116                    .+2
ØØØ116   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ12Ø   ØØØ122                    .+2
ØØØ122   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ124   ØØØ126                    .+2
ØØØ126   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ13Ø   ØØØ132                    .+2
ØØØ132   Ø2Ø367                    2Ø367             ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ134   ØØØ136                    .+2
```

```
ØØØ136  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ14Ø  ØØØ142                  .+2
ØØØ142  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ144  ØØØ146                  .+2
ØØØ146  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ15Ø  ØØØ152                  .+2
ØØØ152  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ154  ØØØ156                  .+2
ØØØ156  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ16Ø  ØØØ162                  .+2
ØØØ162  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ164  ØØØ166                  .+2
ØØØ166  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ17Ø  ØØØ172                  .+2
ØØØ172  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ174  ØØØ176                  .+2
ØØØ176  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ2ØØ  ØØØ2Ø2                  .+2
ØØØ2Ø2  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ2Ø4  ØØØ2Ø6                  .+2
ØØØ2Ø6  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ21Ø  ØØØ212                  .+2
ØØØ212  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ214  ØØØ216                  .+2
ØØØ216  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ22Ø  ØØØ222                  .+2
ØØØ222  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ224  ØØØ226                  .+2
ØØØ226  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ23Ø  ØØØ232                  .+2
ØØØ232  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ234  ØØØ236                  .+2
ØØØ236  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ24Ø  ØØØ242                  .+2
ØØØ242  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ244  ØØØ246                  .+2
ØØØ246  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ25Ø  ØØØ252                  .+2
ØØØ252  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ254  ØØØ256                  .+2
ØØØ256  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ26Ø  ØØØ262                  .+2
ØØØ262  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ264  ØØØ266                  .+2
ØØØ266  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ27Ø  ØØØ272                  .+2
ØØØ272  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ274  ØØØ276                  .+2
ØØØ276  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ3ØØ  ØØØ3Ø2                  .+2
ØØØ3Ø2  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ3Ø4  ØØØ3Ø6                  .+2
ØØØ3Ø6  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ31Ø  ØØØ312                  .+2
ØØØ312  Ø2Ø367                  2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
```

```
000314  000316                          .+2
000316  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000320  000322                          .+2
000322  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000324  000326                          .+2
000326  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000330  000332                          .+2
000332  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000334  000336                          .+2
000336  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000340  000342                          .+2
000342  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000344  000346                          .+2
000346  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000350  000352                          .+2
000352  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000354  000356                          .+2
000356  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000360  000362                          .+2
000362  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000364  000366                          .+2
000366  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000370  000372                          .+2
000372  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000374  000376                          .+2
000376  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000400  000402                          .+2
000402  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000404  000406                          .+2
000406  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000410  000412                          .+2
000412  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000414  000416                          .+2
000416  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000420  000422                          .+2
000422  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000424  000426                          .+2
000426  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000430  000432                          .+2
000432  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000434  000436                          .+2
000436  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000440  000442                          .+2
000442  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000444  000446                          .+2
000446  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000450  000452                          .+2
000452  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000454  000456                          .+2
000456  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000460  000462                          .+2
000462  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000464  000466                          .+2
000466  020367                          20367                   ;SET TRACE BIT WITH A DUMMY COMPARE
000470  000472                          .+2
```

```
ØØØ472  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ474  ØØØ476          .+2
ØØØ476  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ5ØØ  ØØØ5Ø2          .+2
ØØØ5Ø2  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ5Ø4  ØØØ5Ø6          .+2
ØØØ5Ø6  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ51Ø  ØØØ512          .+2
ØØØ512  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ514  ØØØ516          .+2
ØØØ516  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ52Ø  ØØØ522          .+2
ØØØ522  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ524  ØØØ526          .+2
ØØØ526  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ53Ø  ØØØ532          .+2
ØØØ532  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ534  ØØØ536          .+2
ØØØ536  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ54Ø  ØØØ542          .+2
ØØØ542  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ544  ØØØ546          .+2
ØØØ546  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ55Ø  ØØØ552          .+2
ØØØ552  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ554  ØØØ556          .+2
ØØØ556  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ56Ø  ØØØ562          .+2
ØØØ562  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ564  ØØØ566          .+2
ØØØ566  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ57Ø  ØØØ572          .+2
ØØØ572  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE
ØØØ574  ØØØ576          .+2
ØØØ576  Ø2Ø367          2Ø367                   ;SET TRACE BIT WITH A DUMMY COMPARE

        ØØØØ14          .=14

ØØØØ14  ØØ3166          TRCTRP
ØØØØ16  ØØØ34Ø          P7

        ØØØØ3Ø          .=3Ø

ØØØØ3Ø  ØØ257Ø          ERROR
ØØØØ32  ØØØ34Ø          P7
ØØØØ34  ØØ257Ø          ERROR
ØØØØ36  ØØØ34Ø          P7
```

```
        000600                                  .=600

000600  000005                          START:  RESET                           ;CLEAR THE WORLD
000602  012706  000600                          MOV     #START,SP               ;INITIALIZE THE STACK POINTER
000606  012767  000340  177162                  MOV     #P7,PS                  ;LOCKOUT PI BY RAISING CPU PRIORITY
000614  012700  101101                          MOV     #101101,R0              ;REVERSE END ZONE=55
000620  012704  170000                          MOV     #-4096.,R4              ;COUNTER FOR REZ
000624  012767  000013  176510                  MOV     #13,TCCM                ;GO
000632  032767  100200  176502  LP1:    BIT     #B15+B7,TCCM            ;WAIT FOR ERROR OR READY
000640  001774                                  BEQ     .-6                     ;HAVE NEITHER
000642  100002                                  BPL     .+6                     ;HAVE READY
000644  004767  002404                          JSR     PC,SERROR               ;STATUS ERROR
000650  010067  176474                          MOV     R0,TCDT                 ;LOAD MARK TRACK
000654  005204                                  INC     R4                      ;DONE ALL?
000656  001365                                  BNE     LP1                     ;LOOP IF NOT FINISHED
000660  012704  177471                          MOV     #-199.,R4               ;COUNTER FOR IBS
```

```
000664  012700  010101                    MOV     #10101,R0          ;INTERBLOCK SYNC=25
000670  032767  100200  176444    LP2:    BIT     #B15+B7,TCCM       ;WAIT FOR ERROR OR READY
000676  001774                            BEQ     .-6                ;HAVE NEITHER
000700  100002                            BPL     .+6                ;HAVE READY
000702  004767  002346                    JSR     PC,SERROR          ;STATUS ERROR
000706  010067  176436                    MOV     R0,TCDT            ;LOAD MARK CODE
000712  005204                            INC     R4                 ;DONE ALL?
000714  001365                            BNE     LP2                ;IF NOT, KEEP LOADING
000716  012703  176676                    MOV     #-578.,R3          ;COUNTER FOR NUMBER OF BLOCKS
000722  004767  000130            LP3:    JSR     PC,FRMBLK          ;WRITE CODES FOR ONE BLOCK
000726  005203                            INC     R3                 ;DONE ALL?
000730  001374                            BNE     LP3                ;IF NOT, WRITE ANOTHER BLOCK
000732  012704  177471                    MOV     #-199.,R4          ;COUNTER FOR IBS
000736  012700  010101                    MOV     #10101,R0          ;INTERBLOCK SYNC=25
000742  032767  100200  176372    LP4:    BIT     #B15+B7,TCCM       ;WAIT FOR ERROR OR READY
000750  001774                            BEQ     .-6                ;HAVE NEITHER
000752  100002                            BPL     .+6                ;HAVE READY
000754  004767  002274                    JSR     PC,SERROR          ;STATUS ERROR
000760  010067  176364                    MOV     R0,TCDT            ;LOAD MARK CODE
000764  005204                            INC     R4                 ;DONE ALL?
000766  001365                            BNE     LP4                ;IF NOT, KEEP WRITING IBS
000770  012704  170000                    MOV     #-4096.,R4         ;COUNTER FOR FEZ
```

```
000774  012700  010010                  MOV     #10010,R0           ;FORWARD END ZONE=22
001000  032767  100200  176334  LP5:    BIT     #B15+B7,TCCM        ;WAIT FOR ERROR OR READY
001006  001774                          BEQ     .-6                 ;HAVE NEITHER
001010  100002                          BPL     .+6                 ;HAVE READY
001012  004767  002236                  JSR     PC,SERROR           ;STATUS ERROR
001016  010067  176326                  MOV     R0,TCDT             ;LOAD MARK CODE
001022  005204                          INC     R4                  ;DONE ALL?
001024  001365                          BNE     LP5                 ;IF NOT KEEP WRITING FEZ
001026  032767  100200  176306          BIT     #B15+B7,TCCM        ;WAIT FOR ERROR OR READY
001034  001774                          BEQ     .-6                 ;HAVE NEITHER
001036  100002                          BPL     .+6                 ;HAVE READY
001040  004767  002210                  JSR     PC,SERROR           ;STATUS ERROR
001044  005067  176272                  CLR     TCCM                ;STOP TAPE.  MARK + TIMING TRACKS ARE
001050  000000                  HLT1:   XX                          ;WRITTEN.  RESET WRTM SWITCH AND
001052  000167  000044                  JMP     WRTBNO              ;SET WALL SWITCH THEN CONTINUE.
```

```
ØØ1Ø56  Ø127Ø4  177366          FRMBLK: MOV     #-266.,R4               ;COUNTER FOR 1 BLOCK'S WORTH OF MKTRACK
ØØ1Ø62  Ø127ØØ  ØØ5576                  MOV     #BLKMRK,RØ              ;POINTER TO MARK CODE TABLE
ØØ1Ø66  Ø32767  1ØØ2ØØ  176246  LP6:    BIT     #B15+B7,TCCM            ;WAIT FOR ERROR OR READY
ØØ1Ø74  ØØ1774                          BEQ     .-6                     ;HAVE NEITHER
ØØ1Ø76  1ØØØØ2                          BPL     .+6                     ;HAVF READY
ØØ11ØØ  ØØ4767  ØØ215Ø                  JSR     PC,SERROR               ;STATUS ERROR
ØØ11Ø4  Ø11Ø67  17624Ø                  MOV     (RØ),TCDT               ;FETCH MARK CODE
ØØ111Ø  Ø627ØØ  ØØØØØ2                  ADD     #2,RØ                   ;ADVANCE POINTER
ØØ1114  ØØ52Ø4                          INC     R4                      ;DONE ALL?
ØØ1116  ØØ1363                          BNE     LP6                     ;IF NOT FETCH ANOTHER CODE
ØØ112Ø  ØØØ2Ø7                          RTS     PC                      ;IF SO, EXIT

ØØ1122  ØØ4767  ØØ1232          WRTBNO: JSR     PC,COBLKG               ;GENFRATE TABLE OF CMPOBV BLK NUMBERS
ØØ1126  Ø127ØØ  177775                  MOV     #-3,RØ                  ;THREE BLOCKS
ØØ1132  Ø12767  ØØ4ØØ2  1762Ø2          MOV     #4ØØ2,TCCM              ;SEARCH REVERSE
ØØ114Ø  1Ø5267  176176          WLP1:   INCB    TCCM                    ;GO
ØØ1144  Ø32767  1ØØ2ØØ  17617Ø          BIT     #B15+B7,TCCM            ;WAIT FOR ERROR OR READY
ØØ1152  ØØ1774                          BEQ     .-6                     ;HAVE NEITHER
ØØ1154  1ØØØØ2                          BPL     .+6                     ;HAVF READY
ØØ1156  ØØ4767  ØØ2Ø72                  JSR     PC,SERROR               ;STATUS ERROR
ØØ1162  ØØ52ØØ                          INC     RØ                      ;FOUND THREE?
ØØ1164  ØØ1365                          BNE     WLP1                    ;IF NOT KEEP SEARCHING
ØØ1166  Ø127ØØ  Ø76677                  MOV     #76677,RØ               ;COMPLEMENT OBVERSE OF 1Ø11 (LAST BLOCK#)
ØØ1172  Ø12767  ØØØØ17  176142          MOV     #17,TCCM                ;WRITEALL FORWARD
ØØ12ØØ  Ø32767  1ØØ2ØØ  176134          BIT     #B15+B7,TCCM            ;WAIT FOR ERROR OR READY
ØØ12Ø6  ØØ1774                          BEQ     .-6                     ;HAVE NEITHER
ØØ121Ø  1ØØØØ2                          BPL     .+6                     ;HAVE READY
ØØ1212  ØØ4767  ØØ2Ø36                  JSR     PC,SERROR               ;STATUS ERROR
ØØ1216  152767  ØØØØØ3  176114  WLP2:   BISB    #3,TCST                 ;SET XDA BITS FOR Ø REVERSE
ØØ1224  Ø1ØØ67  17612Ø                  MOV     RØ,TCDT                 ;WRITE LAST BLOCK # FROM HERE TO END ZONE
ØØ123Ø  ØØ4767  ØØ1Ø7Ø                  JSR     PC,FLAG1                ;WAIT TO SYNC UP FOR WRITING
ØØ1234  ØØØ77Ø                          BR      WLP2                    ;KEEP WRITING 1Ø11
ØØ1236  Ø12767  ØØ11Ø1  ØØ13Ø6          MOV     #11Ø1,FBLK              ;INITIALIZE PARAMETERS FOR LAST BLOCK,
ØØ1244  Ø127Ø5  ØØ256Ø                  MOV     #BYST,R5                ;XDA BIT TABLE AND
ØØ125Ø  Ø127Ø3  ØØ6532                  MOV     #RBN,R3                 ;TABLE OF REVERSE BLOCK NUMBERS
ØØ1254  Ø12767  ØØ4Ø17  17606Ø          MOV     #4Ø17,TCCM              ;WRITEALL REVERSE
ØØ1262  ØØ5367  ØØ1264          WALUP:  DEC     FBLK                    ;DECREMENT BLOCK NUMBER
ØØ1266  Ø22767  177776  ØØ1256          CMP     #-2,FBLK                ;LAST BLOCK WRITTEN?
ØØ1274  ØØ1531                          BEQ     CHECK                   ;YES- CHECK DATA AND BLOCK NUMBERS

ØØ1276  Ø127Ø4  177777                  MOV     #-1,R4                  ;-1 REVERSE -Ø FWD
ØØ13Ø2  Ø12767  177374  ØØ3352          MOV     #-26Ø.,TOG1             ;NUMBER OF WORDS
ØØ131Ø  Ø32767  1ØØ2ØØ  176Ø24  WLP3:   BIT     #B15+B7,TCCM            ;WAIT FOR ERROR OR READ
ØØ1316  ØØ1774                          BEQ     .-6                     ;HAVE NEITHER
ØØ132Ø  1ØØØØ2                          BPL     .+6                     ;HAVE READY
ØØ1322  ØØ4767  ØØ1726                  JSR     PC,SERROR               ;STATUS ERROR
ØØ1326  152767  ØØØØØ3  176ØØ4          BISB    #3,TCST                 ;1 KRV=Ø FWD
ØØ1334  Ø1Ø467  176Ø1Ø                  MOV     R4,TCDT                 ;LOAD DATA WORD
ØØ134Ø  ØØ5267  ØØ3316                  INC     TOG1                    ;WRITE IT 26Ø TIMES
ØØ1344  ØØ1361                          BNE     WLP3                    ;KEEP WRITING UNTIL FINISHED
ØØ1346  Ø32767  1ØØ2ØØ  175766          BIT     #B15+B7,TCCM            ;WAIT FOR ERROR OR READY
ØØ1354  ØØ1774                          BEQ     .-6                     ;HAVE NEITHER
ØØ1356  1ØØØØ2                          BPL     .+6                     ;HAVF READY
ØØ136Ø  ØØ4767  ØØ167Ø                  JSR     PC,SERROR               ;STATUS ERROR
```

```
001364  112567  175750                  MOVB    (R5)+,TCST      ;FETCH RELEVANT XDA BITS
001370  011367  175754                  MOV     (R3),TCDT       ;FETCH RELEVANT CMP,OBV,BLK#
001374  062703  000002                  ADD     #2,R3           ;ADVANCE TABLE POINTER
001400  020527  002570                  CMP     R5,#BYST+10     ;SEE IF XDA BIT TABLE IS EXHAUSTED
001404  001002                          BNE     .+6             ;IF NOT, PROCEED
001406  012705  002560                  MOV     #BYST,R5        ;IF SO, REINITIALIZE POINTER
001412  012704  002546                  MOV     #WALBF,R4       ;SETUP POINTER FOR LAST FIVE WORDS
001416  012767  177776  003236          MOV     #-2,TOG1        ;COUNT OF TWO
001424  032767  100200  175710  WLP4:   BIT     #B15+B7,TCCM    ;WAIT FOR ERROR OR READY
001432  001774                          BEQ     .-6             ;HAVE NEITHER
001434  100002                          BPL     .+6             ;HAVE READY
001436  004767  001612                  JSR     PC,SERROR       ;STATUS ERROR
001442  152767  000003  175670          BISB    #3,TCST         ;SET XDA 17 & 16
001450  012467  175674                  MOV     (R4)+,TCDT      ;FETCH DATA WORD
001454  005267  003202                  INC     TOG1            ;ADVANCE COUNT
001460  001361                          BNE     WLP4            ;KEEP WRITING UNTIL FINISHED
001462  032767  100200  175652          BIT     #B15+B7,TCCM    ;WAIT FOR ERROR OR READY
001470  001774                          BEQ     .-6             ;HAVE NEITHER
001472  100002                          BPL     .+6             ;HAVE READY
001474  004767  001554                  JSR     PC,SERROR       ;STATUS ERROR
001500  142767  000003  175632          BICB    #3,TCST         ;CLEAR XDA 17 AND 16 FOR REVERSE BLK#
001506  012467  175636                  MOV     (R4)+,TCDT      ;REVERSE BLOCK NUMBER
001512  012767  177776  003142          MOV     #-2,TOG1        ;COUNT OF TWO
001520  032767  100200  175614  WLP5:   BIT     #B15+B7,TCCM    ;WAIT FOR ERROR OR READY
001526  001774                          BEQ     .-6             ;HAVE NEITHER
001530  100002                          BPL     .+6             ;HAVE READY
001532  004767  001516                  JSR     PC,SERROR       ;STATUS ERROR
001536  152767  000003  175574          BISB    #3,TCST         ;SET XDA 17 AND16
001544  012467  175600                  MOV     (R4)+,TCDT      ;FETCH DATA WORD
001550  005267  003106                  INC     TOG1            ;ADVANCE COUNT
001554  001361                          BNE     WLP5            ;KEEP WRITING UNTIL FINISHED
001556  000641                          BR      WALUP           ;FINISHED - DO NEXT BLOCK
```

```
001560  032767  100200  175554  CHECK:  BIT     #B15+B7,TCCM            ;WAIT FOR ERROR OR READY
001566  001774                          BEQ     .-6                     ;HAVE NEITHER
001570  100002                          BPL     .+6                     ;HAVE READY
001572  004767  001456                  JSR     PC,SERROR               ;STATUS ERROR
001576  112767  000003  175536          MOVB    #3,TCCM                 ;REWIND INTO END ZONE

001604  004767  000514          CHKL1:  JSR     PC,FLAG1                ;SKIP NEXT INSTRUCTION IF EZ
001610  000765                          BR      CHECK+4                 ;KEEP REWINDING
001612  005067  175524                  CLR     TCCM                    ;STOP TAPE
001616  005067  003042                  CLR     TOG2                    ;START WITH BLOCK#0
001622  112767  000003  175512  CHKL2:  MOVB    #3,TCCM                 ;SEARCH FWD
001630  032767  100200  175504          BIT     #B15+B7,TCCM            ;WAIT FOR ERROR OR READY
001636  001774                          BEQ     .-6                     ;HAVE NEITHER
001640  100002                          BPL     .+6                     ;HAVE READY
001642  004767  001406                  JSR     PC,SERROR               ;STATUS ERROR
001646  026767  003012  175474          CMP     TOG2,TCDT               ;IS FWD BLOCK NUMBER CORRECT?
001654  001415                          BEQ     DATCHK                                      ;YES - CHECK DATA
001656  016767  175466  002764          MOV     TCDT,BAD                ;NO - PUT INCORRECT BLK# IN BAD FOR DISPLAY
001664  005067  175452                  CLR     TCCM                    ;STOP TAPE AND
001670  016767  002770  002750          MOV     TOG2,GOOD               ;GOOD DATA
001676  104002                          ERR+GB                          ;FWD BLK # WRITTEN INCORRECTLY
001700  003725                          EMES2
001702  012767  004003  175432          MOV     #4003,TCCM              ;TRY AGAIN
001710  012767  177377  002744  DATCHK: MOV     #-257.,TOG1             ;CHECK REV, CHKSUM AND DATA
001716  112767  000007  175416          MOVB    #7,TCCM                 ;READ ALL
001724  032767  100200  175410  DCHKL1: BIT     #B15+B7,TCCM            ;WAIT FOR ERROR OR READY
001732  001774                          BEQ     .-6                     ;HAVE NEITHER
001734  100002                          BPL     .+6                     ;HAVE READY
001736  004767  001312                  JSR     PC,SERROR               ;STATUS ERROR
001742  005767  175402                  TST     TCDT                    ;IT SHOULD=0
001746  001426                          BEQ     DATOK                   ;IF SO PROCEED
001750  005067  175366                  CLR     TCCM                    ;IF NOT STOP TAPE.
001754  005067  002666                  CLR     GOOD                    ;GOOD=0
001760  016767  175364  002662          MOV     TCDT,BAD                ;GET BAD DATA
001766  016727  002672  000000          MOV     TOG2,#0                 ;LOAD AND DEFINE BKN
        001772                          BKN=.-2
001774  012767  000401  002650          MOV     #257.,DATA              ;BASE
002002  066767  002654  002642          ADD     TOG1,DATA               ;GET WORD POSITION
002010  104032                          ERR+BK+GB+DA                    ;DATA ERROR, "BAD" - WORD READ;
002012  003774                          EMES3                           ;"DATA" - WORD POSITION
```

```
002014  012767  004003  175320          MOV     #4003,TCCM          ;TO TRY AGAIN
002022  000670                          BR      CHKL1               ;RESTART CHECK
002024  005267  002632          DATOK:  INC     TOG1                ;CHECK ALL DATA IN BLOCK
002030  001335                          BNE     DCHKL1              ;KEEP CHECKING UNTIL DONE
002032  005267  002626                  INC     TOG2                ;SETUP FOR NEXT BLOCK
002036  022767  001102  002620          CMP     #1102,TOG2          ;HAVE ALL BLOCKS BEEN CHECKED?
002044  001266                          BNE     CHKL2               ;IF NOT KEEP CHECKING
002046  112767  000003  175266  RCHK:   MOVB    #3,TCCM             ;YES - FIND FWD EZ
002054  004767  000244                  JSR     PC,FLAG1            ;SKIP ON EZ
002060  000401                          BR      .+4                 ;ERROR
002062  000402                          BR      .+6                 ;OK
002064  104000                          ERR                         ;BLK# FOUND AFTER 1101
002066  004126                          EMES4
002070  012767  001101  002566          MOV     #1101,TOG2          ;FIRST REVERSE BLK=1101
002076  012767  004000  175236  RERCV:  MOV     #4000,TCCM          ;SET TAPE TO REVERSE
002104  012700  010736                  MOV     #DATBUF,R0          ;INITIALIZE DATA BUFFER POINTER
002110  005010                  ZLUP:   CLR     (R0)                ;ZERO DATA WORD
002112  062700  000002                  ADD     #2,R0               ;ADVANCE POINTER
002116  020027  011736                  CMP     R0,#DATBUF+512.     ;IS BUFFER FILLED?
002122  001372                          BNE     ZLUP                ;IF NOT KEEP CLEARING
002124  112767  000003  175210  CHKL3:  MOVB    #3,TCCM             ;SEARCH REVERSE AND
002132  032767  100200  175202          BIT     #B15+B7,TCCM        ;WAIT FOR ERROR OR READY
002140  001774                          BEQ     .-6                 ;HAVE NEITHER
002142  100002                          BPL     .+6                 ;HAVE READY
002144  004767  001104                  JSR     PC,SERROR           ;STATUS ERROR

002150  026767  002510  175172          CMP     TOG2,TCDT           ;IS REVERSE BLOCK# CORRECT?
002156  001421                          BEQ     WRTDTA              ;YES - WRITE DATA
002160  016767  175164  002462          MOV     TCDT,BAD            ;NO - PUT INCORRECT BLK# IN BAD FOR DISPLAY
002166  005067  175150                  CLR     TCCM                ;STOP TAPE AND
002172  016767  002466  002446          MOV     TOG2,GOOD
002200  104002                          ERR+GB                      ;REVERSE BLK# WRITTEN INC.
002202  004200                          EMES5
002204  112767  000003  175130  RST1:   MOVB    #3,TCCM             ;TO TRY PASS AGAIN
002212  004767  000106                  JSR     PC,FLAG1            ;FIND FWD EZ AND
002216  000772                          BR      RST1                ;RESTART REVERSE
002220  000726                          BR      RERCV               ;CHECK PASS
002222  012767  177400  175114  WRTDTA: MOV     #-400,TCWC          ;WC FOR 1 BLOCK OF DATA
002230  012767  010736  175110          MOV     #DATBUF,TCBA        ;CA INITIALIZATION
002236  112767  000015  175076          MOVB    #15,TCCM            ;WRITE DATA TO MAKE PARITY OK
002244  032767  100200  175070          BIT     #B15+B7,TCCM        ;WAIT FOR ERROR OR READY
002252  001774                          BEQ     .-6                 ;HAVE NEITHER
002254  100002                          BPL     .+6                 ;HAVE READY
002256  000167  000306                  JMP     ERROR               ;HAVE ERROR
002262  005367  002376                  DEC     TOG2                ;DECREMENT BLOCK#
002266  100316                          BPL     CHKL3               ;IF BELOW 0 FINISH UP, OTHERWISE KEEP CHECKING
002270  112767  000003  175044  FINIS:  MOVB    #3,TCCM             ;FIND REVERSE EZ
002276  004767  000022                  JSR     PC,FLAG1            ;SKIP ON EZ
002302  000401                          BR      .+4                 ;ERROR
002304  000402                          BR      .+6                 ;OK
002306  104000                          ERR                         ;BLK# FOUND IN REVERSE AFTER 0
002310  004247                          EMES6
002312  005067  175024                  CLR     TCCM                ;STOP TAPE AND
002316  000000                          XX                          ;HALT.  PROGRAM IS FINISHED.  MOUNT NEW
002320  000167  176254                  JMP     START               ;TAPE, SET WRTM SWITCH AND CONTINUE
```

```
002324  032767  100200  175010  FLAG1:  BIT     #B15+B7,TCCM            ;TEST ERROR AND READY BITS
002332  001774                          BEQ     FLAG1                   ;WAIT FOR EITHER FLAG
002334  100401                          BMI     .+4                     ;IF ERROR - CHECK FURTHER
002336  000207                          RTS     PC                      ;IF READY - EXIT
002340  005767  174774                  TST     TCST                    ;IS ERROR END ZONE?
002344  100402                          BMI     .+6                     ;YES - SKIP
002346  004767  000702                  JSR     PC,SERROR               ;STATUS ERROR
002352  062716  000002                  ADD     #2,(SP)                 ;INCRENT EXIT POINTER TO SKIP ON RETURN
002356  000207                          RTS     PC                      ;EXIT
002360  012700  001101          COBLKG: MOV     #1101,R0                ;COMPLEMENT OBVERSE BLOCKS 1101-0
002364  012701  006532                  MOV     #RBN,R1                 ;BUFFER POINTER INITIALIZATION
002370  010002                  CBKL1:  MOV     R0,R2                   ;FETCH WORD TO BE PROCESSED
002372  005102                          COM     R2                      ;COMPLEMENT IT
002374  012767  177775  002260          MOV     #-3,TOG1                        ;COUNT OF 3
002402  010203                          MOV     R2,R3                   ;MOV WORD INTO WORK AREA
002404  006002                          ROR     R2                      ;SHIFT NEXT 3 BITS INTO POSITION
002406  006002                          ROR     R2                      ;FOR MANIPULATION
002410  006002                          ROR     R2                      ;ON NEXT PASS
                                        AND     1,R3
002412  042703  177776                  BIC     #-1-1,R3                        ;MASK 1 APPLIED TO R3
002416  010346                          MOV     R3,-(SP)                ;STACK IT
002420  010203                  CBKL2:  MOV     R2,R3                   ;MOVE BYTE(3) INTO WORK AREA
002422  006002                          ROR     R2                      ;SHIFT
002424  006002                          ROR     R2                      ;NEXT 3 BITS
002426  006002                          ROR     R2                      ;INTO POSITION
                                        AND     7,R3
002430  042703  177770                  BIC     #-7-1,R3                        ;MASK 7 APPLIED TO R3
002434  010346                          MOV     R3,-(SP)                ;STACK BYTE
002436  005267  002220                  INC     TOG1                    ;DONE ALL?
002442  001366                          BNE     CBKL2                   ;NO
002444  005003                          CLR     R3                      ;YES - CLEAR WORK AREA
002446  066603  000006                  ADD     6(SP),R3                ;ADD AND
002452  004567  000056                  JSR     R5,RTHL                 ;SHIFT BYTES IN REVERSE ORDER
```

```
002456  066603  000004                  ADD     4(SP),R3        ;NEXT BYTE
002462  004567  000046                  JSR     R5,RTHL         ;SHIFT
002466  066603  000002                  ADD     2(SP),R3        ;NEXT BYTE
002472  004567  000036                  JSR     R5,RTHL         ;SHIFT
002476  061603                          ADD     (SP),R3         ;LAST BYTE FROM STACK
002500  004567  000030                  JSR     R5,RTHL         ;SHIFT
002504  004567  000024                  JSR     R5,RTHL         ;SHIFT
002510  062703  000077                  ADD     #77,R3          ;=00 FWD
002514  010311                          MOV     R3,(R1)         ;STORE CMP,ORV,BLK# IN TABLE
002516  062706  000010                  ADD     #10,SP          ;ADVANCE STACK
002522  062701  000002                  ADD     #2,R1           ;ADVANCE TABLE POINTER
002526  005300                          DEC     R0              ;DECREMENT BLK#
002530  100317                          BPL     CBKL1           ;LOOP UNTIL IT PASSES 0
002532  000207                          RTS     PC              ;THEN EXIT
002534  000241                  RTHL:   CLC                     ;THREE BIT LEFT SHIFT, CLEAR CARRY
002536  006103                          ROL     R3              ;SHIFT 1
002540  006103                          ROL     R3              ;      2
002542  006103                          ROL     R3              ;      3
002544  000205                          RTS     R5              ;THEN EXIT
002546  177777                  WALBF:  .WORD   -1              ;-1 REVERSE =0 FORWARD
002550  177777                          .WORD   -1
002552  001101                  FBLK:   .WORD   1101            ;BLOCK NUMBER GOES HERE
002554  177777                          .WORD   -1
002556  177777                          .WORD   -1
002560     003                  BYST:   .BYTE   3               ;TABLE OF XDA 17 & 16 FOR CMP,OBV,BLK#
002561     003                          .BYTE   3
002562     000                          .BYTE   0
002563     000                          .BYTE   0
002564     001                          .BYTE   1
002565     001                          .BYTE   1
002566     002                          .BYTE   2
002567     002                          .BYTE   2
```

```
ØØ257Ø  Ø32767  Ø4ØØØØ  174772  ERROR:  BIT     #B14,SR                 ;TEST TTO DELETE SWITCH
ØØ2576  ØØ11Ø7                          BNE     ERXIT2                  ;EXIT NOW IF TTO DELETE SWITCH IS UP
ØØ26ØØ  ØØ4567  ØØ151Ø                  JSR     R5,SAVØ5                        ;SAVE ACØ-5
ØØ26Ø4  Ø127ØØ  ØØ3412                  MOV     #ERMS1,RØ               ;MESSAGE POINTER TO RØ
ØØ261Ø  ØØ4767  ØØ177Ø                  JSR     PC,TYPOUT               ;PRINT MESSAGE
ØØ2614  Ø166ØØ  ØØØØ14                  MOV     14(SP),RØ                       ;FETCH SAVED PC
ØØ262Ø  1627ØØ  ØØØØØ2                  SUB     #2,RØ                   ;FIND ADDRESS OF ERROR CALL
ØØ2624  Ø1ØØØ5                          MOV     RØ,R5                   ;PUT POINTER IN R5
ØØ2626  ØØ4767  ØØ1564                  JSR     PC,PNTOZS               ;PRINT PC
ØØ2632  Ø127ØØ  ØØ3541                  MOV     #STPMS,RØ               ;MESSAGE POINTER
ØØ2636  ØØ4767  ØØ1742                  JSR     PC,TYPOUT               ;PRINT "PS="
ØØ2642  Ø166ØØ  ØØØØ16                  MOV     16(SP),RØ               ;FETCH SAVED STATUS
ØØ2646  ØØ4767  ØØ1544                  JSR     PC,PNTOZS               ;AND PRINT IT
ØØ2652  Ø32715  ØØØ4ØØ                  BIT     #B8,(R5)                ;TRAP?
ØØ2656  ØØ14Ø2                          BEQ     GOGO                    ;NO
ØØ266Ø  ØØ4767  ØØØ4Ø4                  JSR     PC,SUBER                ;SUBROUTINE ERROR
ØØ2664  Ø166ØØ  ØØØØ14          GOGO:   MOV     14(SP),RØ
ØØ267Ø  Ø62766  ØØØØØ2  ØØØØ14          ADD     #2,14(SP)
ØØ2676  Ø11ØØØ                          MOV     (RØ),RØ
ØØ27ØØ  ØØ4767  ØØ17ØØ                  JSR     PC,TYPOUT
ØØ27Ø4  Ø32715  ØØØØØ4                  BIT     #ST,(R5)                ;STATUS?
ØØ271Ø  ØØ14Ø2                          BEQ     .+6                     ;NO
ØØ2712  ØØ4767  ØØØ2Ø4                  JSR     PC,STYPE                ;YES
ØØ2716  Ø32715  ØØØØØ2                  BIT     #GB,(R5)                ;GOOD/BAD?
ØØ2722  ØØ14Ø2                          BEQ     .+6                     ;SKIP IF=Ø
ØØ2724  ØØ4767  ØØØ13Ø                  JSR     PC,GBTYPE                       ;GOOD/BAD
ØØ273Ø  Ø32715  ØØØØ1Ø                  BIT     #DA,(R5)                ;DATA?
ØØ2734  ØØ14Ø2                          BEQ     .+6                     ;SKIP IF=Ø
ØØ2736  ØØ4767  ØØØ2Ø2                  JSR     PC,DATYPE                       ;DATA
ØØ2742  Ø32715  ØØØØ2Ø                  BIT     #BK,(R5)                ;BLK NO.?
ØØ2746  ØØ14Ø2                          BEQ     .+6                     ;NO
ØØ275Ø  ØØ4767  ØØØ256                  JSR     PC,BKTYPE               ;YES
ØØ2754  Ø32715  ØØØØ4Ø                  BIT     #VC,(R5)                ;VECTOR?
ØØ276Ø  ØØ14Ø2                          BEQ     .+6                     ;NO
ØØ2762  ØØ4767  ØØØ222                  JSR     PC,VCTYPE               ;YES
ØØ2766  ØØ4567  ØØ1336          ERXIT:  JSR     R5,RESTØ5               ;RESTORE ACØ-5
ØØ2772  Ø127ØØ  ØØØØ15                  MOV     #CR,RØ                  ;PRINT
ØØ2776  ØØ4767  ØØ1512                  JSR     PC,TTO                  ;CR & LF
ØØ3ØØ2  Ø32767  1ØØØØØ  17456Ø  ERXIT1: BIT     #B15,SR                 ;SR15(1)=DELETE ERROR HALT
ØØ3Ø1Ø  ØØ1ØØ1                          BNE     .+4                     ;SKIP IF Z=Ø
ØØ3Ø12  ØØØØØØ                  EHALT1: XX                              ;ERROR HALT, CONTINUE
ØØ3Ø14  ØØØØØ2                          RTI                             ;EXIT ERROR ROUTINE
ØØ3Ø16  Ø62716  ØØØØØ2          ERXIT2: ADD     #2,(SP)
ØØ3Ø22  ØØØ767                          BR      ERXIT1
```

```
ØØ3Ø24  Ø32767  Ø2ØØØØ  174536  LERCHK: BIT     #B13,SR         ;SR13(1)=LOOP ON ERROR
ØØ3Ø32  ØØ1ØØ2                          BNE     .+6             ;EXIT IF 1
ØØ3Ø34  Ø62716  ØØØØ24                  ADD     #4,(SP)         ;ADVANCE RETURN VECTOR OVER LOOP JUMP
ØØ3Ø4Ø  ØØØ2Ø7                  LERXT:  RTS     PC              ;EXIT

ØØ3Ø42  Ø32767  Ø1ØØØØ  17452Ø  LUPCHK: BIT     #B12,SR         ;SR12(1)=LOOP ALWAYS
ØØ3Ø5Ø  ØØ1ØØ2                          BNE     .+6             ;EXIT IF 1
ØØ3Ø52  Ø62716  ØØØØØ4                  ADD     #4,(SP)         ;ADVANCE RETURN VECTOR OVER LOOP JUMP
ØØ3Ø56  ØØØ2Ø7                          RTS     PC              ;EXIT

                                GBTYPE: PNTM    GBMS
ØØ3Ø6Ø  Ø127ØØ  ØØ3472                  MOV     #GBMS,RØ                ;PRINT MESSAGE
ØØ3Ø64  ØØ4767  ØØ1514                  JSR     PC,TYPOUT       ;POINTED TO BY GBMS
ØØ3Ø7Ø  Ø167ØØ  ØØ1552                  MOV     GOOD,RØ         ;FETCH C(GOOD)
ØØ3Ø74  ØØ4767  ØØ13Ø6                  JSR     PC,PNTORJ       ;PRINT OCTAL NUMBER
                                        PNTM    SP2
ØØ31ØØ  Ø127ØØ  ØØ3536                  MOV     #SP2,RØ         ;PRINT MESSAGE
ØØ31Ø4  ØØ4767  ØØ1474                  JSR     PC,TYPOUT       ;POINTED TO BY SP2
ØØ311Ø  Ø167ØØ  ØØ1534                  MOV     BAD,RØ          ;FETCH C(BAD)
ØØ3114  ØØ4767  ØØ1266                  JSR     PC,PNTORJ       ;PRINT OCTAL NUMBER
ØØ312Ø  ØØØ2Ø7                          RTS     PC              ;EXIT


ØØ3122  Ø127ØØ  ØØ3513          STYPE:  MOV     #STMS,RØ                ;POINTER TO "STATUS"
ØØ3126  ØØ4767  ØØ1452                  JSR     PC,TYPOUT       ;PRINT TEXT
ØØ3132  Ø167ØØ  ØØ152Ø                  MOV     STATUS,RØ       ;FETCH C(RPCS)
ØØ3136  ØØ4767  ØØ1236                  JSR     PC,PNTOAL               ;PRINT OCTAL NUMBER
ØØ3142  ØØØ2Ø7                          RTS     PC              ;EXIT
ØØ3144  Ø127ØØ  ØØ355Ø          DATYPE: MOV     #DAMS,RØ                ;POINTER TO "DATA"
ØØ315Ø  ØØ4767  ØØ143Ø                  JSR     PC,TYPOUT       ;PRINT TEST
ØØ3154  Ø167ØØ  ØØ1472                  MOV     DATA,RØ         ;FETCH C(DATA)
ØØ316Ø  ØØ4767  ØØ1232                  JSR     PC,PNTOZS       ;PRINT OCTAL NUMBER
ØØ3164  ØØØ2Ø7                          RTS     PC              ;EXIT


ØØ3166  Ø11627  ØØØØØØ          TRCTRP: MOV     (SP),#Ø         ;LOAD AND DEFINE BAD PI ADDRESS SLOT
        ØØ317Ø                          BADPAD=.-2
ØØ3172  162767  ØØØØØ6  17777Ø          SUB     #6,BADPAD       ;ADJUST ADDRESS
ØØ32ØØ  Ø22626                          POPPOP                  ;ADJUST STACK
ØØ32Ø2  1Ø4Ø4Ø                          ERR+VC                  ;PRINT ERROR
ØØ32Ø4  ØØ3574                          TRCMES                  ;UNEXPECTED INTERRUPT
ØØ32Ø6  ØØØØØ2                          RTI                     ;EXIT

                                VCTYPE: PNTM    VECMES
ØØ321Ø  Ø127ØØ  ØØ3562                  MOV     #VECMES,RØ              ;PRINT MESSAGE
ØØ3214  ØØ4767  ØØ1364                  JSR     PC,TYPOUT       ;POINTED TO BY VECMES
ØØ322Ø  Ø167ØØ  177744                  MOV     BADPAD,RØ       ;GET BAD VECTOR
ØØ3224  ØØ4767  ØØ1166                  JSR     PC,PNTOZS       ;PRINT ADDRESS
ØØ323Ø  ØØØ2Ø7                          RTS     PC              ;EXIT

                                BKTYPE: PNTM    BKMES
ØØ3232  Ø127ØØ  ØØ3657                  MOV     #BKMES,RØ               ;PRINT MESSAGE
ØØ3236  ØØ4767  ØØ1342                  JSR     PC,TYPOUT       ;POINTED TO BY BKMES
```

```
003242  016700  176524                  MOV     BKN,R0                  ;GET BLK#
003246  004767  001144                  JSR     PC,PNTOZS               ;PRINT IT
003252  000207                          RTS     PC                      ;EXIT

003254  016767  174062  001374  SERROR: MOV     TCCM,STATUS
003262  104404                          ERS+ST                          ;STATUS ERROR
003264  003677                          EMES1
003266  000207                          RTS     PC

003270  012700  003436          SUBER:  MOV     #SUBRMS,R0
003274  004767  001304                  JSR     PC,TYPOUT
003300  016600  000022                  MOV     22(SP),R0
003304  162700  000006                  SUB     #6,R0
003310  004767  001102                  JSR     PC,PNTOZS
003314  000207                          RTS     PC
```

```
ØØ3316  Ø17627  ØØØØØØ  ØØØØØØ  RTR:    MOV     @(SP),#Ø
        ØØ3322                          ROTOG=.-2
ØØ3324  Ø62716  ØØØØØ2                  ADD     #2,(SP)
ØØ333Ø  ØØ5767  177766                  TST     ROTOG
ØØ3334  ØØ1ØØ1                          BNE     .+4
ØØ3336  ØØØ2Ø7                          RTS     PC
ØØ334Ø  ØØØ241                  RRLUP:  CLC
ØØ3342  ØØ6ØØØ                          ROR     RØ
ØØ3344  ØØ5367  177752                  DEC     ROTOG
ØØ335Ø  ØØ1373                          BNE     RRLUP
ØØ3352  ØØØ2Ø7                          RTS     PC
ØØ3354  Ø17667  ØØØØØØ  17774Ø  RTL:    MOV     @(SP),ROTOG
ØØ3362  Ø62716  ØØØØØ2                  ADD     #2,(SP)
ØØ3366  ØØ5767  17773Ø                  TST     ROTOG
ØØ3372  ØØ1ØØ1                          BNE     .+4
ØØ3374  ØØØ2Ø7                          RTS     PC
ØØ3376  ØØØ241                  RLLUP:  CLC
ØØ34ØØ  ØØ61ØØ                          ROL     RØ
ØØ34Ø2  ØØ5367  177714                  DEC     ROTOG
ØØ34Ø6  ØØ1373                          BNE     RLLUP
ØØ341Ø  ØØØ2Ø7                          RTS     PC
```

```
ØØ3412     Ø46                ERMS1:  .ASCII  /&&ERROR AT ADDRESS @/
ØØ3413     Ø46
ØØ3414     1Ø5
ØØ3415     122
ØØ3416     122
ØØ3417     117
ØØ342Ø     122
ØØ3421     Ø4Ø
ØØ3422     1Ø1
ØØ3423     124
ØØ3424     Ø4Ø
ØØ3425     1Ø1
ØØ3426     1Ø4
ØØ3427     1Ø4
ØØ343Ø     122
ØØ3431     1Ø5
ØØ3432     123
ØØ3433     123
ØØ3434     Ø4Ø
ØØ3435     1ØØ

ØØ3436     Ø46                SUBRMS: .ASCII  /&CALLED FROM SUBROUTINE AT @/
ØØ3437     1Ø3
ØØ344Ø     1Ø1
ØØ3441     114
ØØ3442     114
ØØ3443     1Ø5
ØØ3444     1Ø4
ØØ3445     Ø4Ø
ØØ3446     1Ø6
ØØ3447     122
ØØ345Ø     117
ØØ3451     115
ØØ3452     Ø4Ø
ØØ3453     123
ØØ3454     125
ØØ3455     1Ø2
ØØ3456     122
ØØ3457     117
ØØ346Ø     125
ØØ3461     124
ØØ3462     111
ØØ3463     116
ØØ3464     1Ø5
ØØ3465     Ø4Ø
ØØ3466     1Ø1
ØØ3467     124
ØØ347Ø     Ø4Ø
ØØ3471     1ØØ

ØØ3472     Ø46                GBMS:   .ASCII  /&  GOOD    BAD&@/
ØØ3473     Ø4Ø
ØØ3474     Ø4Ø
ØØ3475     1Ø7
```

```
003476     117
003477     117
003500     104
003501     040
003502     040
003503     040
003504     040
003505     040
003506     102
003507     101
003510     104
003511     046
003512     100

003513     046                    STMS:    .ASCII  /&STATUS= @/
003514     123
003515     124
003516     101
003517     124
003520     125
003521     123
003522     075
003523     040
003524     100

003525     046                    PASMS:   .ASCII  /&&PASS# @/
003526     046
003527     120
003530     101
003531     123
003532     123
003533     043
003534     040
003535     100

003536     040                    SP2:     .ASCII  /  @/
003537     040
003540     100

003541     040                    STPMS:   .ASCII  /  PS= @/
003542     040
003543     120
003544     123
003545     075
003546     040
003547     100


003550     046                    DAMS:    .ASCII  /&DATA=   @/
003551     104
003552     101
003553     124
003554     101
003555     075
003556     040
```

```
003557     040
003560     040
003561     100

003562     046                   VECMES: .ASCII  /&VECTOR= @/
003563     126
003564     105
003565     103
003566     124
003567     117
003570     122
003571     075
003572     040
003573     100

003574     046                   TRCMES: .ASCII  /&UNEXPECTED INTERRUPT THROUGH THE FOLLOWING VECTOR@/
003575     125
003576     116
003577     105
003600     130
003601     120
003602     105
003603     103
003604     124
003605     105
003606     104
003607     040
003610     111
003611     116
003612     124
003613     105
003614     122
003615     122
003616     125
003617     120
003620     124
003621     040
003622     124
003623     110
003624     122
003625     117
003626     125
003627     107
003630     110
003631     040
003632     124
003633     110
003634     105
003635     040
003636     106
003637     117
003640     114
003641     114
003642     117
003643     127
```

```
ØØ3644    111
ØØ3645    116
ØØ3646    1Ø7
ØØ3647    Ø4Ø
ØØ365Ø    126
ØØ3651    1Ø5
ØØ3652    1Ø3
ØØ3653    124
ØØ3654    117
ØØ3655    122
ØØ3656    1ØØ

ØØ3657    Ø46                   BKMES:  .ASCII  /&BLOCK NUMBER= @/
ØØ366Ø    1Ø2
ØØ3661    114
ØØ3662    117
ØØ3663    1Ø3
ØØ3664    113
ØØ3665    Ø4Ø
ØØ3666    116
ØØ3667    125
ØØ367Ø    115
ØØ3671    1Ø2
ØØ3672    1Ø5
ØØ3673    122
ØØ3674    Ø75
ØØ3675    Ø4Ø
ØØ3676    1ØØ

ØØ3677    Ø46                   EMES1:  .ASCII  /&DECTAPE STATUS ERROR@/
ØØ37ØØ    1Ø4
ØØ37Ø1    1Ø5
ØØ37Ø2    1Ø3
ØØ37Ø3    124
ØØ37Ø4    1Ø1
ØØ37Ø5    12Ø
ØØ37Ø6    1Ø5
ØØ37Ø7    Ø4Ø
ØØ371Ø    123
ØØ3711    124
ØØ3712    1Ø1
ØØ3713    124
ØØ3714    125
ØØ3715    123
ØØ3716    Ø4Ø
ØØ3717    1Ø5
ØØ372Ø    122
ØØ3721    122
ØØ3722    117
ØØ3723    122
ØØ3724    1ØØ

ØØ3725    Ø46                   EMES2:  .ASCII  /&FORWARD BLOCK NUMBER WRITE-READ ERROR@/
ØØ3726    1Ø6
ØØ3727    117
```

```
ØØ373Ø     122
ØØ3731     127
ØØ3732     1Ø1
ØØ3733     122
ØØ3734     1Ø4
ØØ3735     Ø4Ø
ØØ3736     1Ø2
ØØ3737     114
ØØ374Ø     117
ØØ3741     1Ø3
ØØ3742     113
ØØ3743     Ø4Ø
ØØ3744     116
ØØ3745     125
ØØ3746     115
ØØ3747     1Ø2
ØØ375Ø     1Ø5
ØØ3751     122
ØØ3752     Ø4Ø
ØØ3753     127
ØØ3754     122
ØØ3755     111
ØØ3756     124
ØØ3757     1Ø5
ØØ376Ø     Ø55
ØØ3761     122
ØØ3762     1Ø5
ØØ3763     1Ø1
ØØ3764     1Ø4
ØØ3765     Ø4Ø
ØØ3766     1Ø5
ØØ3767     122
ØØ377Ø     122
ØØ3771     117
ØØ3772     122
ØØ3773     1ØØ

ØØ3774     Ø46                    EMES3:  .ASCII  /&DATA ERROR. "BAD" = WORD READ,"DATA" = WORD POSITION IN THE BLOCK/
ØØ3775     1Ø4
ØØ3776     1Ø1
ØØ3777     124
ØØ4ØØØ     1Ø1
ØØ4ØØ1     Ø4Ø
ØØ4ØØ2     1Ø5
ØØ4ØØ3     122
ØØ4ØØ4     122
ØØ4ØØ5     117
ØØ4ØØ6     122
ØØ4ØØ7     Ø56
ØØ4Ø1Ø     Ø4Ø
ØØ4Ø11     Ø42
ØØ4Ø12     1Ø2
ØØ4Ø13     1Ø1
ØØ4Ø14     1Ø4
ØØ4Ø15     Ø42
```

```
ØØ4Ø16     Ø4Ø
ØØ4Ø17     Ø75
ØØ4Ø2Ø     Ø4Ø
ØØ4Ø21     127
ØØ4Ø22     117
ØØ4Ø23     122
ØØ4Ø24     1Ø4
ØØ4Ø25     Ø4Ø
ØØ4Ø26     122
ØØ4Ø27     1Ø5
ØØ4Ø3Ø     1Ø1
ØØ4Ø31     1Ø4
ØØ4Ø32     Ø56
ØØ4Ø33     Ø42
ØØ4Ø34     1Ø4
ØØ4Ø35     1Ø1
ØØ4Ø36     124
ØØ4Ø37     1Ø1
ØØ4Ø4Ø     Ø42
ØØ4Ø41     Ø4Ø
ØØ4Ø42     Ø75
ØØ4Ø43     Ø4Ø
ØØ4Ø44     127
ØØ4Ø45     117
ØØ4Ø46     122
ØØ4Ø47     1Ø4
ØØ4Ø5Ø     Ø4Ø
ØØ4Ø51     12Ø
ØØ4Ø52     117
ØØ4Ø53     123
ØØ4Ø54     111
ØØ4Ø55     124
ØØ4Ø56     111
ØØ4Ø57     117
ØØ4Ø6Ø     116
ØØ4Ø61     Ø4Ø
ØØ4Ø62     111
ØØ4Ø63     116
ØØ4Ø64     Ø4Ø
ØØ4Ø65     124
ØØ4Ø66     11Ø
ØØ4Ø67     1Ø5
ØØ4Ø7Ø     Ø4Ø
ØØ4Ø71     1Ø2
ØØ4Ø72     114
ØØ4Ø73     117
ØØ4Ø74     1Ø3
ØØ4Ø75     113

ØØ4Ø76     Ø46                            .ASCII  /&(Ø = REVERSE CHECKSUM)@/
ØØ4Ø77     Ø5Ø
ØØ41ØØ     Ø6Ø
ØØ41Ø1     Ø4Ø
ØØ41Ø2     Ø75
ØØ41Ø3     Ø4Ø
```

```
ØØ4104     122
ØØ4105     105
ØØ4106     126
ØØ4107     105
ØØ4110     122
ØØ4111     123
ØØ4112     105
ØØ4113     Ø40
ØØ4114     103
ØØ4115     110
ØØ4116     105
ØØ4117     103
ØØ4120     113
ØØ4121     123
ØØ4122     125
ØØ4123     115
ØØ4124     Ø51
ØØ4125     100

ØØ4126     Ø46                  EMES41:  .ASCII  /&FORWARD BLOCK NUMBER FOUND AFTER 1101(8)@/
ØØ4127     106
ØØ4130     117
ØØ4131     122
ØØ4132     127
ØØ4133     101
ØØ4134     122
ØØ4135     104
ØØ4136     Ø40
ØØ4137     102
ØØ4140     114
ØØ4141     117
ØØ4142     103
ØØ4143     113
ØØ4144     Ø40
ØØ4145     116
ØØ4146     125
ØØ4147     115
ØØ4150     102
ØØ4151     105
ØØ4152     122
ØØ4153     Ø40
ØØ4154     106
ØØ4155     117
ØØ4156     125
ØØ4157     116
ØØ4160     104
ØØ4161     Ø40
ØØ4162     101
ØØ4163     106
ØØ4164     124
ØØ4165     105
ØØ4166     122
ØØ4167     Ø40
ØØ4170     Ø61
```

```
004171      061
004172      060
004173      061
004174      050
004175      070
004176      051
004177      100

004200      046                         EMES5:  .ASCII  /&REVERSE BLOCK NUMBER WRITE-READ ERROR@/
004201      122
004202      105
004203      126
004204      105
004205      122
004206      123
004207      105
004210      040
004211      102
004212      114
004213      117
004214      103
004215      113
004216      040
004217      116
004220      125
004221      115
004222      102
004223      105
004224      122
004225      040
004226      127
004227      122
004230      111
004231      124
004232      105
004233      055
004234      122
004235      105
004236      101
004237      104
004240      040
004241      105
004242      122
004243      122
004244      117
004245      122
004246      100

004247      046                         EMES6:  .ASCII  /&REVERSE BLOCK NUMBER FOUND BEFORE 0@/
004250      122
004251      105
004252      126
004253      105
004254      122
004255      123
```

```
ØØ4256     1Ø5
ØØ4257     Ø4Ø
ØØ4260     1Ø2
ØØ4261     114
ØØ4262     117
ØØ4263     1Ø3
ØØ4264     113
ØØ4265     Ø4Ø
ØØ4266     116
ØØ4267     125
ØØ427Ø     115
ØØ4271     1Ø2
ØØ4272     1Ø5
ØØ4273     122
ØØ4274     Ø4Ø
ØØ4275     1Ø6
ØØ4276     117
ØØ4277     125
ØØ43ØØ     116
ØØ43Ø1     1Ø4
ØØ43Ø2     Ø4Ø
ØØ43Ø3     1Ø2
ØØ43Ø4     1Ø5
ØØ43Ø5     1Ø6
ØØ43Ø6     117
ØØ43Ø7     122
ØØ431Ø     1Ø5
ØØ4311     Ø4Ø
ØØ4312     Ø6Ø
ØØ4313     1ØØ
```

```
        004314                          .EVEN

004314  010446                  SAV05:  MOV     R4,-(SP)        ;SAVE R0-R5 ON THE STACK
004316  010346                          MOV     R3,-(SP)        ;R5 WAS STACKED BY THE JSR
004320  010246                          MOV     R2,-(SP)        ;R4-R3 ARE STACKED ABOVE IT
004322  010146                          MOV     R1,-(SP)        ;WITH R0 ON TOP
004324  010046                          MOV     R0,-(SP)        ;R5 HOLDS THE RETURN PC, BUT AN
004326  000115                          JMP     (R5)            ;RTS WOULD POP THE STACK-SO JUMP OUT

004330  005726                  RESTO5: TST     (SP)+           ;MOVE SP OVER WORD SAVED BY JSR
004332  012600                          MOV     (SP)+,R0        ;R0-4
004334  012601                          MOV     (SP)+,R1        ;ARE POPPED
004336  012602                          MOV     (SP)+,R2        ;IN LIFO
004340  012603                          MOV     (SP)+,R3        ;SEQUENCE
004342  012604                          MOV     (SP)+,R4        ;R5 IS POPPED BY THE RTS AND
004344  000205                          RTS     R5              ;THE PC IS TAKEN FROM R5

004346  005067  000306          PNTDAL: CLR     SCON
004352  000407                          BR      DECGO
004354  012767  000020  000276  PNTDRJ: MOV     #20,SCON
004362  000403                          BR      DECGO
004364  012767  000060  000266  PNTDZS: MOV     #60,SCON
004372  012702  000012          DECGO:  MOV     #10.,R2
004376  000414                          BR      OCTGO+4
004400  005067  000254          PNTOAL: CLR     SCON
004404  000407                          BR      OCTGO
004406  012767  000020  000244  PNTORJ: MOV     #20,SCON
004414  000403                          BR      OCTGO
004416  012767  000060  000234  PNTOZS: MOV     #60,SCON
004424  012702  000010          OCTGO:  MOV     #8.,R2
004430  005027  000000                  CLR     #0
        004432                          ZSW=.-2
004434  004767  000114          DECREM: JSR     PC,IDIVR        ;DIVIDE (R0) BY (R2) WITH REMAINDER IN R1
004440  010146                          MOV     R1,-(SP)        ;STACK REMAINDER
004442  005267  177764                  INC     ZSW
004446  026727  177760  000006          CMP     ZSW,#6
004454  001402                          BEQ     POPTT           ;YES - POP AND PRINT
004456  004767  177752                  JSR     PC,DECREM       ;NO - DIVIDE NUMBER BY RADIX
004462  005367  177744          POPTT:  DEC     ZSW
004466  001002                          BNE     .+6
004470  005067  000164                  CLR     SCON
004474  012600                          MOV     (SP)+,R0        ;POP NUMBER FROM STACK
004476  001402                          BEQ     .+6
004500  005067  000154                  CLR     SCON
004504  166700  000150                  SUB     SCON,R0
004510  062700  000060                  ADD     #60,R0          ;MAKE ASCII
```

```
ØØ4514  Ø32767  Ø4ØØØØ  173Ø46  TTO:     BIT     #B14,SR          ;IF SR14=1,DELETE TYPEOUT
ØØ4522  ØØ1Ø1Ø                           BNE     TTOLF-2          ;EXIT
ØØ4524  Ø1ØØ67  173Ø36                   MOV     RØ,TPB           ;PRINT CONTENTS OF RØ
ØØ453Ø  1Ø5767  173Ø3Ø          TTOLP:   TSTB    TPS              ;DONE YET?
ØØ4534  1ØØ375                           BPL     TTOLP            ;NO - KEEP LOOPING
ØØ4536  Ø227ØØ  ØØØØ15                   CMP     #CR,RØ           ;WAS CHARACTER A CR:
ØØ4542  ØØ14Ø1                           BEQ     TTOLF            ;YES - PRINT LINE FEED
ØØ4544  ØØØ2Ø7                           RTS     PC               ;RETURN TO POPTT OR MAIN PROGRAM
ØØ4546  Ø127ØØ  ØØØØ12          TTOLF:   MOV     #LF,RØ           ;PRINT LF
ØØ4552  ØØØ76Ø                           BR      TTO              ;EXECUTE PRINT

ØØ4554  Ø127Ø3  ØØØØ2Ø          IDIVR:   MOV     #16.,R3
ØØ456Ø  ØØ5ØØ1                           CLR     R1
ØØ4562  ØØ63ØØ                  SD:      ASL     RØ
ØØ4564  ØØ61Ø1                           ROL     R1
ØØ4566  Ø2Ø2Ø1                           CMP     R2,R1
ØØ457Ø  1Ø1ØØ2                           BHI     .+6
ØØ4572  16Ø2Ø1                           SUB     R2,R1
ØØ4574  ØØ52ØØ                           INC     RØ
ØØ4576  ØØ53Ø3                           DEC     R3
ØØ46ØØ  ØØ137Ø                           BNE     SD
ØØ46Ø2  ØØØ2Ø7                           RTS     PC

ØØ46Ø4  Ø1ØØ46                  TYPOUT:  MOV     RØ,-(SP)         ;STACK ADDRESS POINTER FOR MESSAGE
ØØ46Ø6  1176ØØ  ØØØØØØ          TPOFCH:  MOVB    @(SP),RØ         ;FETCH ASCII BYTE
ØØ4612  Ø227ØØ  ØØØ1ØØ                   CMP     #1ØØ,RØ          ;IS IT @(TERMINATOR)?
ØØ4616  ØØ1411                           BEQ     TPOUTX           ;YES - EXIT
ØØ462Ø  Ø227ØØ  ØØØØ46                   CMP     #46,RØ           ;IS IT CRLF FLAG?
ØØ4624  ØØ1ØØ2                           BNE     .+6              ;NO
ØØ4626  Ø127ØØ  ØØØØ15                   MOV     #CR,RØ           ;YES- CHANGE DATA TO CRLF
ØØ4632  ØØ4767  177656                   JSR     PC,TTO           ; PRINT
ØØ4636  ØØ5216                           INC     (SP)             ;MOVE POINTER TO NEXT BYTE
ØØ464Ø  ØØØ762                           BR      TPOFCH           ;FETCH NEXT CHARACTER
ØØ4642  ØØ5726                  TPOUTX:  POP                      ;POP STACK TO REACH RETURN VECTOR
ØØ4644  ØØØ2Ø7                           RTS     PC               ;EXIT

                                ;VARIABLE SLOTS

ØØ4646  ØØØØØØ                  GOOD:    XX
ØØ465Ø  ØØØØØØ                  BAD:     XX
ØØ4652  ØØØØØØ                  DATA:    XX
ØØ4654  ØØØØØØ                  DIVID:   XX
ØØ4656  ØØØØØØ                  STATUS:  XX
ØØ466Ø  ØØØØØØ                  SCON:    XX
ØØ4662  ØØØØØØ                  TOG1:    XX
ØØ4664  ØØØØØØ                  TOG2:    XX
ØØ4666  ØØØØØØ                  TOG3:    XX
ØØ467Ø  ØØØØØØ                  TOG4:    XX
ØØ4672  ØØØØØØ                  WORK:    XX
ØØ4674  ØØØØØØ                  BTOG:    XX
ØØ4676  ØØØØØØ                  TEMP1:   XX
```

```
004700  000000                  PASCNT: XX
004702  000020                  MASK:   XX
004704  000020                  LERR:   XX
004706  000020                  DEBUG:  XX
        005176                          .=DEBUG+200

        005506                          .=.+400
```

```
ØØ55Ø6  Ø1Ø1Ø1              BLKMRK: .WORD   Ø1Ø1Ø1          ;INTERBLOCK SYNC=25
ØØ551Ø  Ø1Ø11Ø                      .WORD   Ø1Ø11Ø          ;FORWARD BLOCK MARK=26
ØØ5512  Ø11Ø1Ø                      .WORD   Ø11Ø1Ø          ;REVFRSE GUARD=32
ØØ5514  ØØ1ØØØ                      .WORD   ØØ1ØØØ          ;LOCK=1Ø
ØØ5516  ØØ1ØØØ                      .WORD   ØØ1ØØØ          ;REVERSE PARITY=1Ø
ØØ552Ø  ØØ1ØØØ                      .WORD   ØØ1ØØØ          ;REVERSE FINAL=1Ø
ØØ5522  ØØ1ØØØ                      .WORD   ØØ1ØØØ          ;REVERSE PRE-FINAL=1Ø
        ØØØ374                      .REPT   374
                                    .WORD   111ØØØ          ;MARK DATA=7Ø
                                    .ENDR
ØØ5524  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5526  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ553Ø  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5532  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5534  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5536  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ554Ø  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5542  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5544  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5546  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ555Ø  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5552  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5554  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5556  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ556Ø  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5562  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5564  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5566  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ557Ø  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5572  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5574  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5576  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ56ØØ  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ56Ø2  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ56Ø4  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ56Ø6  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ561Ø  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5612  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5614  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5616  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ562Ø  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5622  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5624  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5626  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ563Ø  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5632  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5634  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5636  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ564Ø  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5642  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5644  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5646  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ565Ø  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5652  111ØØØ                      .WORD   111ØØØ          ;MARK DATA=7Ø
```

```
PALX11  VØØ3    19-APR-72       19:11   PAGE 18-1

ØØ5654  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5656  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ566Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5662  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5664  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5666  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ567Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5672  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5674  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5676  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ57ØØ  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ57Ø2  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ57Ø4  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ57Ø6  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ571Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5712  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5714  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5716  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ572Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5722  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5724  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5726  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ573Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5732  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5734  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5736  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ574Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5742  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5744  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5746  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ575Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5752  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5754  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5756  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ576Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5762  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5764  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5766  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ577Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5772  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5774  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ5776  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6ØØØ  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6ØØ2  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6ØØ4  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6ØØ6  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6Ø1Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6Ø12  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6Ø14  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6Ø16  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6Ø2Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6Ø22  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6Ø24  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6Ø26  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6Ø3Ø  111ØØØ                          .WORD   111ØØØ          ;MARK DATA=7Ø
```

```
006032  111000                          .WORD   111000          ;MARK DATA=70
006034  111000                          .WORD   111000          ;MARK DATA=70
006036  111000                          .WORD   111000          ;MARK DATA=70
006040  111000                          .WORD   111000          ;MARK DATA=70
006042  111000                          .WORD   111000          ;MARK DATA=70
006044  111000                          .WORD   111000          ;MARK DATA=70
006046  111000                          .WORD   111000          ;MARK DATA=70
006050  111000                          .WORD   111000          ;MARK DATA=70
006052  111000                          .WORD   111000          ;MARK DATA=70
006054  111000                          .WORD   111000          ;MARK DATA=70
006056  111000                          .WORD   111000          ;MARK DATA=70
006060  111000                          .WORD   111000          ;MARK DATA=70
006062  111000                          .WORD   111000          ;MARK DATA=70
006064  111000                          .WORD   111000          ;MARK DATA=70
006066  111000                          .WORD   111000          ;MARK DATA=70
006070  111000                          .WORD   111000          ;MARK DATA=70
006072  111000                          .WORD   111000          ;MARK DATA=70
006074  111000                          .WORD   111000          ;MARK DATA=70
006076  111000                          .WORD   111000          ;MARK DATA=70
006100  111000                          .WORD   111000          ;MARK DATA=70
006102  111000                          .WORD   111000          ;MARK DATA=70
006104  111000                          .WORD   111000          ;MARK DATA=70
006106  111000                          .WORD   111000          ;MARK DATA=70
006110  111000                          .WORD   111000          ;MARK DATA=70
006112  111000                          .WORD   111000          ;MARK DATA=70
006114  111000                          .WORD   111000          ;MARK DATA=70
006116  111000                          .WORD   111000          ;MARK DATA=70
006120  111000                          .WORD   111000          ;MARK DATA=70
006122  111000                          .WORD   111000          ;MARK DATA=70
006124  111000                          .WORD   111000          ;MARK DATA=70
006126  111000                          .WORD   111000          ;MARK DATA=70
006130  111000                          .WORD   111000          ;MARK DATA=70
006132  111000                          .WORD   111000          ;MARK DATA=70
006134  111000                          .WORD   111000          ;MARK DATA=70
006136  111000                          .WORD   111000          ;MARK DATA=70
006140  111000                          .WORD   111000          ;MARK DATA=70
006142  111000                          .WORD   111000          ;MARK DATA=70
006144  111000                          .WORD   111000          ;MARK DATA=70
006146  111000                          .WORD   111000          ;MARK DATA=70
006150  111000                          .WORD   111000          ;MARK DATA=70
006152  111000                          .WORD   111000          ;MARK DATA=70
006154  111000                          .WORD   111000          ;MARK DATA=70
006156  111000                          .WORD   111000          ;MARK DATA=70
006160  111000                          .WORD   111000          ;MARK DATA=70
006162  111000                          .WORD   111000          ;MARK DATA=70
006164  111000                          .WORD   111000          ;MARK DATA=70
006166  111000                          .WORD   111000          ;MARK DATA=70
006170  111000                          .WORD   111000          ;MARK DATA=70
006172  111000                          .WORD   111000          ;MARK DATA=70
006174  111000                          .WORD   111000          ;MARK DATA=70
006176  111000                          .WORD   111000          ;MARK DATA=70
006200  111000                          .WORD   111000          ;MARK DATA=70
006202  111000                          .WORD   111000          ;MARK DATA=70
006204  111000                          .WORD   111000          ;MARK DATA=70
006206  111000                          .WORD   111000          ;MARK DATA=70
```

```
006210  111000                  .WORD   111000          ;MARK DATA=70
006212  111000                  .WORD   111000          ;MARK DATA=70
006214  111000                  .WORD   111000          ;MARK DATA=70
006216  111000                  .WORD   111000          ;MARK DATA=70
006220  111000                  .WORD   111000          ;MARK DATA=70
006222  111000                  .WORD   111000          ;MARK DATA=70
006224  111000                  .WORD   111000          ;MARK DATA=70
006226  111000                  .WORD   111000          ;MARK DATA=70
006230  111000                  .WORD   111000          ;MARK DATA=70
006232  111000                  .WORD   111000          ;MARK DATA=70
006234  111000                  .WORD   111000          ;MARK DATA=70
006236  111000                  .WORD   111000          ;MARK DATA=70
006240  111000                  .WORD   111000          ;MARK DATA=70
006242  111000                  .WORD   111000          ;MARK DATA=70
006244  111000                  .WORD   111000          ;MARK DATA=70
006246  111000                  .WORD   111000          ;MARK DATA=70
006250  111000                  .WORD   111000          ;MARK DATA=70
006252  111000                  .WORD   111000          ;MARK DATA=70
006254  111000                  .WORD   111000          ;MARK DATA=70
006256  111000                  .WORD   111000          ;MARK DATA=70
006260  111000                  .WORD   111000          ;MARK DATA=70
006262  111000                  .WORD   111000          ;MARK DATA=70
006264  111000                  .WORD   111000          ;MARK DATA=70
006266  111000                  .WORD   111000          ;MARK DATA=70
006270  111000                  .WORD   111000          ;MARK DATA=70
006272  111000                  .WORD   111000          ;MARK DATA=70
006274  111000                  .WORD   111000          ;MARK DATA=70
006276  111000                  .WORD   111000          ;MARK DATA=70
006300  111000                  .WORD   111000          ;MARK DATA=70
006302  111000                  .WORD   111000          ;MARK DATA=70
006304  111000                  .WORD   111000          ;MARK DATA=70
006306  111000                  .WORD   111000          ;MARK DATA=70
006310  111000                  .WORD   111000          ;MARK DATA=70
006312  111000                  .WORD   111000          ;MARK DATA=70
006314  111000                  .WORD   111000          ;MARK DATA=70
006316  111000                  .WORD   111000          ;MARK DATA=70
006320  111000                  .WORD   111000          ;MARK DATA=70
006322  111000                  .WORD   111000          ;MARK DATA=70
006324  111000                  .WORD   111000          ;MARK DATA=70
006326  111000                  .WORD   111000          ;MARK DATA=70
006330  111000                  .WORD   111000          ;MARK DATA=70
006332  111000                  .WORD   111000          ;MARK DATA=70
006334  111000                  .WORD   111000          ;MARK DATA=70
006336  111000                  .WORD   111000          ;MARK DATA=70
006340  111000                  .WORD   111000          ;MARK DATA=70
006342  111000                  .WORD   111000          ;MARK DATA=70
006344  111000                  .WORD   111000          ;MARK DATA=70
006346  111000                  .WORD   111000          ;MARK DATA=70
006350  111000                  .WORD   111000          ;MARK DATA=70
006352  111000                  .WORD   111000          ;MARK DATA=70
006354  111000                  .WORD   111000          ;MARK DATA=70
006356  111000                  .WORD   111000          ;MARK DATA=70
006360  111000                  .WORD   111000          ;MARK DATA=70
006362  111000                  .WORD   111000          ;MARK DATA=70
006364  111000                  .WORD   111000          ;MARK DATA=70
```

```
ØØ6366  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ637Ø  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6372  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6374  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6376  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ64ØØ  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ64Ø2  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ64Ø4  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ64Ø6  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ641Ø  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6412  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6414  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6416  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ642Ø  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6422  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6424  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6426  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ643Ø  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6432  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6434  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6436  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ644Ø  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6442  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6444  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6446  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ645Ø  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6452  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6454  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6456  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ646Ø  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6462  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6464  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6466  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ647Ø  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6472  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6474  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6476  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ65ØØ  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ65Ø2  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ65Ø4  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ65Ø6  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ651Ø  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6512  111ØØØ                  .WORD   111ØØØ          ;MARK DATA=7Ø
ØØ6514  111Ø11                  .WORD   111Ø11          ;PRE-FINAL=73
ØØ6516  111Ø11                  .WORD   111Ø11          ;FINAL=73
ØØ652Ø  111Ø11                  .WORD   111Ø11          ;PARITY=73
ØØ6522  111Ø11                  .WORD   111Ø11          ;REVERSE LOCK=73
ØØ6524  1Ø1ØØ1                  .WORD   1Ø1ØØ1          ;GUARD=51
ØØ6526  1ØØ1Ø1                  .WORD   1ØØ1Ø1          ;REVERSE BLOCK MARK=45
ØØ653Ø  Ø1Ø1Ø1                  .WORD   Ø1Ø1Ø1          ;INTERBLOCK SYNC=25

        Ø1Ø736          RBN:    .=.+22Ø4

        Ø11736          DATBUF: .=.+1ØØØ
        ØØØØØ1                  .END            THAT'S ALL FOLKS!
```

```
B0      000001       EMES6   004247       POPTT   004          TPS     177564
B1      000002       ERMS1   003412       PS      177776       TPV     000064
B10     002000       ERR     104000       R0      000000R      TRCMES  003574
B11     004000       ERROR   002570       R1      000001R      TRCTRP  003166
B12     010000       ERS     104400       R2      000002R      TTO     004514
B13     020000       ERXIT   002766       R3      000003R      TTOLF   004546
B14     040000       ERXIT1  003002       R4      000004R      TTOLP   004530
B15     100000       ERXIT2  003016       R5      000005R      TYPOUT  004604
B2      000004       FBLK    002552       R6      000006R      VC      000040
B3      000010       FINIS   002270       R7      000007R      VCTYPE  003210
B4      000020       FLAG1   002324       RBN     006532       VECMES  003562
B5      000040       FRMBLK  001056       RCHK    002046       WALBF   002546
B6      000100       GB      000002       RERCV   002070       WALUP   001262
B7      000200       GBMS    003472       REST05  004330       WLP1    001140
B8      000400       GBTYPE  003060       RLLUP   003376       WLP2    001216
B9      001000       GOGO    002664       ROTOG   003322       WLP3    001310
BAD     004650       GOOD    004646       RRLUP   003340       WLP4    001424
BADPAD  003170       HLT1    001050       RST1    002204       WLP5    001520
BK      000020       IDIVR   004554       RTHL    002534       WORK    004672
BKMES   003657       LERCHK  003024       RTL     003354       WRTBNO  001122
BKN     001772       LERR    004704       RTR     003316       WRTDTA  002222
BKTYPE  003232       LERXT   003040       SAV05   004314       XX      000000
BLKMRK  005506       LF      000012       SCON    004660       ZLUP    002110
BTOG    004674       LP1     000632       SD      004562       ZSW     004432
BYST    002560       LP2     000670       SERROR  003254
CBKL1   002370       LP3     000722       SP      000006R
CBKL2   002420       LP4     000742       SP2     003536
CC      177776       LP5     001000       SR      177570
CHECK   001560       LP6     001066       ST      000004
CHKL1   001604       LUPCHK  003042       START   000600
CHKL2   001622       MASK    004702       STATUS  004656
CHKL3   002124       NOP     000240       STMS    003513
COBLKG  002360       OCTGO   004424       STPMS   003541
CR      000015       P0      000000       STYPE   003122
DA      000010       P1      000040       SUBER   003270
DAMS    003550       P2      000100       SUBRMS  003436
DATA    004652       P3      000140       TCBA    177346
DATBUF  010736       P4      000200       TCCM    177342
DATCHK  001710       P5      000240       TCDT    177350
DATOK   002024       P6      000300       TCST    177340
DATYPE  003144       P7      000340       TCWC    177344
DCHKL1  001724       PASCNT  004700       TEMP1   004676
DEBUG   004706       PASMS   003525       TKB     177562
DECGO   004372       PC      000007R      TKS     177560
DECREM  004434       PNTDAL  004346       TKV     000060
DIVID   004654       PNTDRJ  004354       TOG1    004662
EHALT1  003012       PNTDZS  004364       TOG2    004664
EMES1   003677       PNTOAL  004400       TOG3    004666
EMES2   003725       PNTORJ  004406       TOG4    004670
EMES3   003774       PNTOZS  004416       TPB     177566
EMES4   004126       POP     005726       TPOFCH  004606
EMES5   004200       POPPOP  222626       TPOUTX  004642
```

```
ERRORS DETECTED: Ø

RUN-TIME:  11 SECONDS

5K CORE USED
```