TA11

LOGIC TEST 1

MD-11-DZTAA-C

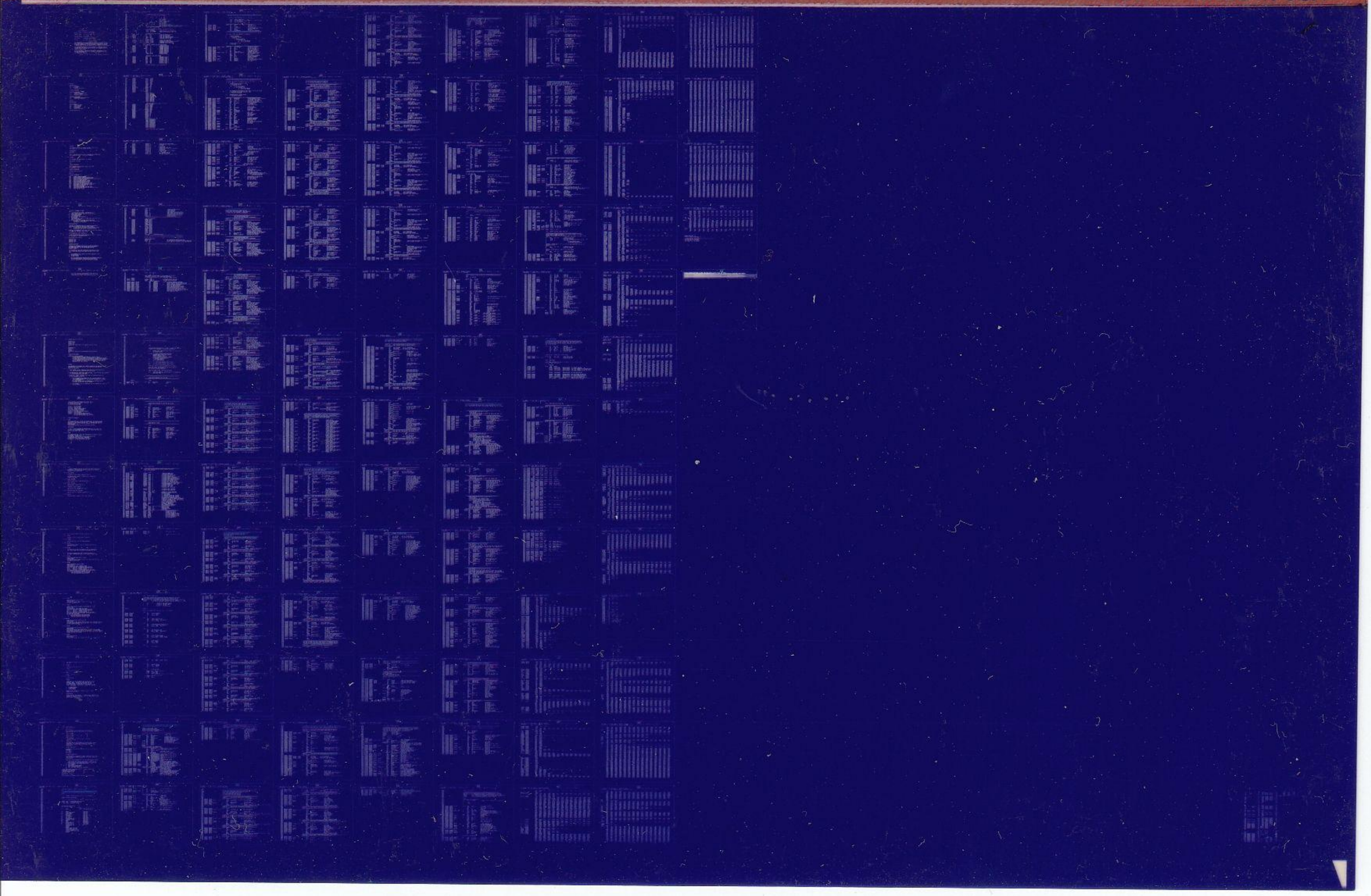
EP-DZTAA-C-DL-A

FICHE 1 OF 1

NOV 1976

digital

MADE IN USA



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                                .REM    %
```

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZTAA-C-D

PRODUCT NAME: TA11 LOGIC TEST (PART 1)

DATE REVISED: 21 JUNE 76

MAINTAINER: DIAGNOSTIC ENGINEERING

AUTHOR: JIM LACEY

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                                1.      ABSTRACT

                                        THIS PROGRAM CONTAINS A SERIES OF BASIC LOGIC TESTS
                                        THAT CHECK THE TA11 FOR PROPER OPERATION.

                                2.      REQUIREMENTS

                                2.1     EQUIPMENT

                                        PDP-11 COMPUTER WITH OR WITHOUT HARDWARE SWITCH REGISTER
                                        WITH CONSOLE TELETYPE,  AND A TA11 CASSETTE

                                2.2     STORAGE

                                        THIS PROGRAM REQUIRES APPROX. 4K STORAGE.

                                2.3     PRELIMINARY PROGRAMS

                                        NONE

                                3.      LOADING PROCEDURE

                                        USE STANDARD PROCEDURE FOR LOADING .ABS TAPES
                                        OR A CASSETTE TAPE.

                                4.      STARTING PROCEDURE

                                4.1     CONTROL SWITCH SETTINGS

                                        SEE 5.1.

                                4.2     STARTING ADDRESSES

                                        200     NORMAL STARTING ADDRESS
                                        204     SELECT DRIVE(S) BEFORE STARTING TEST
                                        210     SELECT DRIVE(S) AND ADDRESSES BEFORE STARTING TEST
                                        214     SETUP FOR MANUAL LOOPING
                                        220     WRITE FILE GAP FROM BOT TO EOT
                                        224     WRITE CONTINOUS BLOCKS OF DATA
                                        230     READ CONTINOUS BLOCKS OF DATA
                                        234     WRITE FILE GAP AND A BLOCK OF DATA
                                        240     READ BLOCK OF DATA AND INTO A FILE GAP
                                        244     SPACE FWD FILE GAP FROM BOT TO EOT
                                        250     BACK SPACE FILE GAPS
                                        500     LOAD SWITCH REGISTER INTO THE TACS
                                        600     WRITE SWITCH REGISTER ON TAPE FROM BOT TO EOT
                                        700     READ FROM BOT TO EOT
```

4.3 PROGRAM & OPERATOR ACTION

1. LOAD PROGRAM INTO MEMORY (SEE SECTION 3.)
2. LOAD A WRITE ENABLED CASSETTE IN BOTH DRIVES
3. REWIND BOTH DRIVES
4. LOAD ADDRESS 200.
5. SET SWITCHES (SEE SECTION 5.1)
6. PRESS START.
7. THE PROGRAM WILL LOOP & TTY BELL WILL RING ONCE EVERY PASS, IF SW<10>=0.

*** NOTE:IF USING THE SOFTWARE SWITCH REGISTER
PROGRAM WILL TYPE "SWR=XXXXXX NEW=" AFTER TYPING
THE NAME OF THE PROGRAM.

4.3.1 DRIVE SELECTION

STARTING THE PROGRAM AT 200 WILL RESULT IN AUTOMATIC SELECTION OF DRIVES "A" AND "B" TO BE TESTED.
NOTE: IF LOAD MEDIUM IS CASSETTE WITH STANDARD VECTOR PROGRAM WILL RESPOND AS IF STARTED AT 210.

STARTING THE PROGRAM AT 204, 210, OR 214 ALLOWS THE OPERATOR TO SELECT THE DRIVE(S) TO BE TESTED.

THE PROGRAM WILL TYPE "DRIVE(S)?".

EITHER OR BOTH DRIVES CAN BE SELECTED BY TYPING "A" AND/OR "B" FOLLOWED BY A CARRIAGE RETURN.

4.3.1.1 DRIVE SELECTION EXAMPLES

```
DRIVE(S)? A,B
DRIVE(S)? AB
DRIVE(S)? B,A
DRIVE(S)? B
```

4.3.2 ADDRESS SELECTION

STARTING THE PROGRAM AT 210 OR 214 ALLOWS THE OPERATOR TO CHANGE THE "CONTROL AND STATUS" AND "DATA BUFFER" REGISTER ADDRESSES, THE VECTOR ADDRESS AND THE PRIORITY LEVEL.

THE PROGRAM WILL ASK FOR THE DRIVES TO BE TESTED AS PER 4.3.1. AFTER THE DRIVES HAVE BEEN SELECTED IT WILL ASK FOR:

1. BUS ADDRESS OF THE CONTROL AND STATUS REGISTER (TACS)
2. VECTOR ADDRESS
3. PRIORITY LEVEL

AND THE OPERATOR MUST RESPOND WITH THE DESIRED PARAMETER OR A CARRIAGE RETURN (WHICH IMPLIES LEAVE AS IS).
WHEN ALL PARAMETERS HAVE BEEN DEFINED THE PROGRAM

```
                                        WILL TYPE THEM BACK OUT AND ASK IF THEY ARE OK AT
                                        WHICH TIME THE OPERATOR RESPONSES WITH A "Y" OR A
                                        "CARRIAGE RETURN" FOR "YES" ANYTHING ELSE IS A "NO".
```

```
                        4.3.2.1 ADDRESS SELECTION EXAMPLES

                                DRIVES(S) A
                                TACS? 177500
                                VECTOR? 260
                                PRIORITY? 6
                                TACS=177500 TADB=177502 VECTOR=000260 PRIORITY=000300
                                OK?

                                DRIVES(S) A,B
                                TACS? 470
                                VECTOR?
                                PRIORITY?
                                TACS=177470 TADB=177472 VECTOR=000260 PRIORITY=000300
                                OK?

                        5.      OPERATING PROCEDURE

                        5.1     OPERATIONAL SWITCH SETTINGS
                                        IF THE DIAGNOSTIC IS RUN ON A CPU WITHOUT A SWITCH
                                        REGISTER THEN A SOFTWARE SWITCH REGISTER IS USED WHICH ALLOWS
                                        THE USER THE SAME SWITCH OPTIONS AS THE HARDWARE SWITCH REGISTER.
                                        IF THE HARDWARE SWITCH REGISTER DOES NOT EXIST OR IF ONE DOES
                                        AND IT CONTAINS ALL ONES (177777) THEN THE SOFTWARE SWITCH
                                        REGISTER (LOC. 176) IS USED.


                                CONTROL:

                                THIS PROGRAM ALSO SUPPORTS THE DYNAMIC LOADING OF THE SOFTWARE SWITCH
                                REGISTER (LOC. 176) FROM THE TTY. THIS CAN BE ACCOMPLISHED BY
                                DOING THE FOLLOWING:

                                1) TYPE CONTROL G <↑G>; THIS WILL ALLOW THE TTY TO ENTER DATA INTO
                                   LOC. 176 AT SELECTED POINTS WITHIN THE PROGRAM.

                                2) THE MACHINE WILL THEN TYPE: SWR=XXXXXXNEW= (XXXXXX IS THE OCTAL CONTENTS
                                   OF THE SOFTWARE SWITCH REGISTER.)

                                3) AFTER THE ''NEW='' HAS BEEN TYPED THEN THE OPERATOR CAN DO ONE
                                   OF THE FOLLOWING AT THE TTY:

                                     A) TYPE A NUMBER TO BE LOADED INTO LOC. 176 FOLLOWED BY A <CR>.
                                        (ONLY NUMBERS BETWEEN 0-7 WILL BE ACCEPTED AND ONLY 6 NUMBERS
                                        WILL BE ALLOWED)
                                        IF A <CR> IS THE FIRST KEY DEPRESSED THE SOFTWARE SWITCH
                                        REGISTER CONTENTS WILL NOT BE CHANGED.

                                     B) IF A CONTROL U <↑U> IS DEPRESSED THEN THE PROGRAM WILL SEND YOU
                                        BACK TO STEP 2.
```

```
                                WITH SW<15:08>=0 THE PROGRAM WILL PRINT OUT ON
                                ERRORS AND CONTINUE IN TEST.  BELL WILL RING
                                AT COMPLETION OF A PASS.
                                THE SWITCH SETTINGS ARE:

                                SW<15>=1...HALT ON ERROR
                                SW<14>=1...LOOP ON TEST
                                SW<13>=1...INHIBIT ERROR TYPEOUTS
                                SW<11>=1...INHIBIT ITERATIONS
                                SW<10>=1...RING BELL ON ERROR
                                SW<10>=0...RING BELL ON PASS COMPLETE
                                SW<09>=1...LOOP ON ERROR
                                SW<08>=1...LOOP ON TEST AS PER SW<07:00>
                                SW<07>=1...LOCK ON CURRENT DRIVE (ONLY VALID
                                          FOR STARTING ADDRESSES 220 THRU 250).


                        5.2     SUBROUTINE ABSTRACTS

                        5.2.1   SCOPE

                                THIS SUBROUTINE CALL (VIA AN IOT INSTRUCTION) IS PLACED BETWEEN
                                EACH TEST IN THE INSTRUCTION SECTION.  IT RECORDS THE STARTING
                                ADDRESS OF EACH TEST IN LOCATION "$LPADR" AND "$LPERR" AS IT IS
                                BEING ENTERED.
                                THIS ROUTINE SUPPORTS THE S/W SWITCH REG FUNCTIONS

                        5.2.2   TRAPCATCHER

                                A ".+2" - "HALT" SEQUENCE IS REPEATED FROM LOC. 0 TO LOC. 776
                                TO CATCH ANY UNEXPECTED TRAPS.  THUS, ANY UNEXPECTED TRAPS WILL
                                HALT AT THE DEVICE TRAP VECTOR +2.

                        5.2.3   ERROR

                                THIS SUBROUTINE CALL (VIA A EMT INSTRUCTION) IS USED TO REPORT
                                ALL ERRORS.  (REFER TO 6.)
                                THIS ROUTINE SUPPORTS THE S/W SWITCH REG FUNCTIONS
                                IF PROCESSOR HALTS (BIT 15=1), OPERATOR
                                CAN RESET S/W SWITCH REGISTER BY HITTING A
                                "CONTROL G" (↑G) BEFORE HITTING CONTINUE.
```

```
                                5.2.4   TRAP

                                        A NUMBER OF SUBROUTINES ARE CALLED BY THE TRAP INSTRUCTION.
                                        FOLLOWING IS THE CALLS USED AND THE LABEL OF THE STARTING
                                        ADDRESS OF THE SUBROUTINES.

                                5.2.4.1 TYPE ($TYPE)

                                        ROUTINE TO TYPE AN ASCIZ STRING ON THE TTY

                                        THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS
                                        AFTER A LINE FEED.

                                5.2.4.2 RDCHR ($RDCHR)

                                        READ A SINGLE ASCII CHARACTER FROM THE TTY

                                5.2.4.3 RDLIN ($RDLIN)

                                        READ AN ASCII STRING FROM THE TTY

                                5.2.4.4 WAITREADY (WAIT.ON.READY)

                                        WAIT ON THE "TA11 READY" BIT TO SET

                                5.2.4.5 WAITXFER (WAIT.FOR.XFER.REQ)

                                        WAIT ON THE "TA11 TRANSFER REQUEST" BIT TO SET

                                5.2.4.6 $TYPOC

                                        CHANGE A BINARY NUMBER TO OCTAL ASCII AND TYPE IT.
```

```
                        5.2.5   THE FOLLOWING SUBROUTINES ARE CALLED BY A JSR

                        5.2.5.1 $TYPEC

                                ROUTINE TO TYPE A SINGLE ASCII CHARACTER

                        5.2.5.2 TYPERR

                                THIS ROUTINE WILL TYPE THE ERROR MESSAGES

                        5.2.5.3 SELDRV

                                THIS ROUTINE IS USED TO ASK THE OPERATOR WHAT DRIVE(S)
                                ARE TO BE TESTED

                        5.2.5.4 SELADR

                                THIS ROUTINE WILL ASK THE OPERATOR FOR THE ADDRESSES OF
                                THE "TACS","TADB" AND VECTOR AND THE PRIORITY TO USE.


                        5.2.6   THE FOLLOW ROUTINES ARE USED TO MAKE ADJUSTMENTS TO
                                THE TU60.  BEFORE USING ANY OF THEM LOAD AND START 214.

                        5.2.6.1 WFGSUB

                                WRITE FILE GAPS FROM "BOT" TO "EOT"
                                START AT 220
                                THIS ROUTINE CAN BE USED TO ADJUST THE "WRITE GAP MONO" AND
                                THE "WRITE DELAY MONO".

                        5.2.6.2 WRTSUB

                                WRITE CONTINUOUS BLOCKS OF DATA
                                START AT 224
                                THE PROGRAM WILL HALT THREE(3) TIMES
                                AFTER EACH HALT SET THE SWR AND PRESS CONTINUE
                                HALT 1 --- SWR<7:0> = NUMBER OF BYTES PER BLOCK
                                HALT 2 ---SWR<7:0> = PATTERN DESIRED
                                HALT 3 --- SWR<15:0> = OPERATIONAL SWITCH SETTINGS
                                THIS ROUTINE CAN BE USED TO ADJUST THE "GAP TIME MONO"
                                ** IF USING SOFTWARE SWITCH REGISTER AFTER
                                        EACH HALT OPERATOR WILL BE PROMPED
                                        FOR THE VALUE WITH "SWR=XXX NEW="
```

```
                                5.2.6.3 RDSUB

                                        READ CONTINUOUS BLOCKS OF DATA
                                        START AT 230
                                        THIS ROUTINE CAN BE USED TO ADJUST THE "SIGNAL MONO"
                                        AND THE "THRESHOLD POT"

                                5.2.6.4 WGPBLK

                                        WRITE A FILE GAP AND A BLOCK OF DATA FROM BOT TO ECT
                                        START AT 234
                                        THE PROGRAM WILL HALT THREE (3) TIMES
                                        AFTER EACH HALT SET THE SWR AND PRESS CONTINUE
                                        HALT 1 --- SWR<7:0> = NUMBER OF BYTES PER BLOCK
                                        HALT 2 --- SWR<7:0> = PATTERN DESIRED
                                        HALT 3 --- SWR<15:0> = OPERATIONAL SWITCH SETTINGS
                                        THIS ROUTINE CAN BE USED TO ADJUST THE "WRITE GAP MONO"
                                        AND THE "GAP TIME MONO".
                                        ** IF USING SOFTWARE SWITCH REGISTER AFTER
                                                EACH HALT OPERATOR WILL BE PROMPED
                                                FOR THE VALUE WITH "SWR=XXX NEW="

                                5.2.6.5 RGBLK

                                        READ A BLOCK OF DATA AND A FILE GAP
                                        START AT 240
                                        THIS ROUTINE IS USED AFTER "WRITE A BLOCK AND A FILE GAP" ROUTINE
                                        IT CAN BE USED TO ADJUST THE "SIGNAL MON".  THE THRESHOLD POT"
                                        AND THE "TAPE BLANK MONO".

                                5.2.6.6 SFFGSB

                                        SPACE FORWARD FILE GAP FROM "BOT" TO "EOT"
                                        START AT 244
                                        THIS ROUTINE CAN BE USED AFTER "WRITE FILE GAP" FOR LOW SPEED
                                        SPACE FOWARD (TAPE BLANK MONO CAN BE ADJUSTED).  OR AFTER READ OR
                                        WRITE A FILE GAP AND A BLOCK OF DATA FOR HIGH SPEED SPACE FORWARD
                                        (SIGNAL MONO CAN BE CHECKED).

                                5.2.6.7 BSFGSB

                                        BACK SPACE FILE GAP
                                        START AT 250
                                        THIS ROUTINE CAN BE USED TO ADJUST OR CHECK THE "SIGNAL MONO".
```

```
                        5.2.7   THE FOLLOWING SUBROUTINES ARE USED BY THE ADJUSTMENT
                                ROUTINES

                        5.2.7.1 SETBUF

                                SETUP BLOCK SIZE AND PATTERN

                        5.2.7.2 WRTBLK

                                WRITES A BLOCK OF DATA

                        5.2.7.3 RDBLK

                                READS A BLOCK OF DATA

                        5.2.7.4 NXTDRV

                                CHANGE DRIVE

                        6.      ERRORS

                                THERE ARE A NUMBER OF ERRORS THAT CAN OCCUR IN THIS
                                PROGRAM.  WHEN AN ERROR IS ENCOUNTERED THE CALL TO
                                THE ERROR ROUTINE IS MADE AND IF SW(13) IS NOT
                                SET AN ERROR MESSAGE PERTAINING TO THE ERROR WILL BE
                                TYPED.  EACH ERROR TYPE OUT WILL CONTAIN THE FOLLOWING:

                                1.  AN ERROR MESSAGE
                                2.  A DATA HEADER
                                3.  A DATA STRING

                                REFER TO THE LISTING UNDER $ERRTB FOR THE DIFFERENT
                                ERRORS THAT CAN OCCUR.

                        7.      RESTRICTIONS

                                BEFORE STARTING THE PROGRAM THE OPERATOR MUST INSURE THAT A
                                CASSETTE IS LOADED IN THE DRIVE(S) TO BE TESTED AND IS WRITE
                                ENABLED AND AT BEGINNING OF TAPE.
```

```
449
450
451                                     8.      MISCELLANEOUS
452
453                                     8.1     EXECUTION TIME
454
455                                             THE FIRST PASS TAKES APPROXIMATELY 45 SECONDS ALL
456                                             SUBSEQUENT PASSES TAKE APPROXIMATELY 100 SECONDS.
457
458                                     8.2     STACK POINTER
459
460                                             STACK IS INITIALLY SET TO 1100.
461
462                                     8.3     PASS COUNT
463
464                                             A PROGRAM PASS THRU COUNT IS KEPT IN "$PASS".
465
466                                     8.4     ITERATIONS
467
468                                             THE FIRST PASS OF THE PROGRAM WILL AUTOMATICALLY START
469                                             ITERATIONS.  ALL SUBSEQUENT PASSES WILL PERFORM FULL,
470                                             (2000 DECIMAL UNLESS OTHERWISE SPECIFIED WITHIN A TEST),
471                                             ITERATIONS.
472
473                                     8.5     SPECIAL REGISTERS
474
475                                             REGISTER R3,R4 AND R5 ARE RESERVED FOR THE THE FOLLOWING
476                                             PURPOSES:
477                                             R3 = DRIVE
478                                             R4 = TACS
479                                             R5 = TADB
480
481                                     9.      PROGRAM DESCRIPTION
482
483                                             THIS PROGRAM IS A SEQUENCE OF SMALL INDEPENDENT TESTS THAT
484                                             CHECK THE TA11 FOR PROPER OPERATION WITH TAPE MOTION KEPT
485                                             AT A MINIMUM.
486
487                                             THE TESTS CAN BE GROUPED INTO THE FOLLOWING GENERAL GROUPS.
488
489                                             1.  VERIFY THAT THE "CONTROL AND STATUS" (TACS) AND THE
490                                                 "DATA BUFFER" (TADB) REGISTERS RESPOND TO ADDRESSING.
491                                             2.  TEST THE "TACS" FOR PROPER OPERATION
492                                             3.  TEST "READY"
493                                             4.  TEST "CLEAR LEADER ERROR"
494                                             5.  TEST "TRANSFER REQUEST"
495                                             6.  TEST THE "TADB" FOR PROPER OPERATION.
496                                             %
497                                     .TITLE  TA11 BASIC LOGIC TEST (PART 1)  MAINDEC-11-DZTAA-C
498                                     ;*COPYRIGHT (C) 1973,1976
499                                     ;*DIGITAL EQUIPMENT CORP.
500                                     ;*MAYNARD, MASS. 01754
501                                     ;*
502                                     ;*PROGRAM BY JIM LACEY
503                                     ;*
504                                     ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
```

```
                        ;*PACKAGE (MAINDEC-11-DZQAC-C1),MAR 24, 1976.
                        ;*
                        ;;**********************************************************************
                        ;;**********************************************************************
                        ;;**********************************************************************
                        .REM!

                                GENERAL INFORMATION ABOUT THE TA11/TU60 CASSETTE

                        ADDRESS MNEMONIC DESCRIPTION
                        ----------------------------


                        777500  TACS    CONTROL AND STATUS REGISTER
                        777502  TADB    DATA BUFFER REGISTER
                           260  TAVEC   INTERRUPT VECTOR


                        TACS REGISTER DESCRIPTION
                        -------------------------

                                                        INIT
                        BIT     NAME                    STATE   READ AND/OR WRITE?
                        ---     ----                    -----   -----------------

                        15      ERROR                   ?       READ ONLY
                        14      BLOCK CHECK ERROR       0       READ ONLY
                        13      CLEAR LEADER            ?       READ ONLY
                        12      WRITE LOCK              ?       READ ONLY
                        11      FILE GAP                0       READ ONLY
                        10      TIMING ERROR            0       READ ONLY
                        09      OFF LINE                ?       READ ONLY
                        08      UNIT SELECT             0       READ/WRITE
                        07      TRANSFER REQUEST        0       READ ONLY
                        06      INTERRUPT ENABLE        0       READ/WRITE
                        05      READY                   1       READ ONLY
                        04      ILBS                    0       READ/WRITE
                        03      FUNCTION BIT 02         0       READ/WRITE
                        02      FUNCTION BIT 01         0       READ/WRITE
                        01      FUNCTION BIT 00         0       READ/WRITE
                                0=WRITE-FILE-GAP
                                1=WRITE
                                2=READ
                                3=BACK SPACE FILE GAP
                                4=BACK SPACE BLOCK GAP
                                5=SPACE FORWARD FILE GAP
                                6=SPACE FORWARD BLOCK GAP
                                7=REWIND
                        00      GO BIT                  0       WRITE ONLY!
```

```
                        ;;*****************************************************************
                        .SBTTL  OPERATIONAL SWITCH SETTINGS
                        ;*
                        ;*      SWITCH                  USE
                        ;*      ------          --------------------
                        ;*        15            HALT ON ERROR
                        ;*        14            LOOP ON TEST
                        ;*        13            INHIBIT ERROR TYPEOUTS
                        ;*        11            INHIBIT ITERATIONS
                        ;*        10            BELL ON ERROR
                        ;*         9            LOOP ON ERROR
                        ;*         8            LOOP ON TEST IN SWR<7:0>
                        ;*         7            LOCK ON CURRENT DRIVE (ONLY VALID WITH MANUAL LOOPING)
                        ;;*****************************************************************
                        .SBTTL  BASIC DEFINITIONS

                        ;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***
001100                  STACK=  1100
                        .EQUIV  EMT,ERROR       ;;BASIC DEFINITION OF ERROR CALL
                        .EQUIV  IOT,SCOPE       ;;BASIC DEFINITION OF SCOPE CALL

                        ;*MISCELLANEOUS DEFINITIONS
000011                  HT=     11              ;;CODE FOR HORIZONTAL TAB
000012                  LF=     12              ;;CODE FOR LINE FEED
000015                  CR=     15              ;;CODE FOR CARRIAGE RETURN
000200                  CRLF=   200             ;;CODE FOR CARRIAGE RETURN-LINE FEED
177776                  PS=     177776          ;;PROCESSOR STATUS WORD
                        .EQUIV  PS,PSW
177774                  STKLMT= 177774          ;;STACK LIMIT REGISTER
177772                  PIRQ=   177772          ;;PROGRAM INTERRUPT REQUEST REGISTER
177570                  DSWR=   177570          ;;HARDWARE SWITCH REGISTER
177570                  DDISP=  177570          ;;HARDWARE DISPLAY REGISTER

                        ;*GENERAL PURPOSE REGISTER DEFINITIONS
000000                  R0=     %0              ;;GENERAL REGISTER
000001                  R1=     %1              ;;GENERAL REGISTER
000002                  R2=     %2              ;;GENERAL REGISTER
000003                  R3=     %3              ;;GENERAL REGISTER
000004                  R4=     %4              ;;GENERAL REGISTER
000005                  R5=     %5              ;;GENERAL REGISTER
000006                  R6=     %6              ;;GENERAL REGISTER
000007                  R7=     %7              ;;GENERAL REGISTER
                        .EQUIV  R6,SP           ;;STACK POINTER
                        .EQUIV  R7,PC           ;;PROGRAM COUNTER

                        ;*PRIORITY LEVEL DEFINITIONS
000000                  PR0=    0               ;;PRIORITY LEVEL 0
000040                  PR1=    40              ;;PRIORITY LEVEL 1
000100                  PR2=    100             ;;PRIORITY LEVEL 2
000140                  PR3=    140             ;;PRIORITY LEVEL 3
000200                  PR4=    200             ;;PRIORITY LEVEL 4
000240                  PR5=    240             ;;PRIORITY LEVEL 5
000300                  PR6=    300             ;;PRIORITY LEVEL 6
000340                  PR7=    340             ;;PRIORITY LEVEL 7

                        ;*"SWITCH REGISTER" SWITCH DEFINITIONS
```

```
                100000          SW15=   100000
                040000          SW14=   40000
                020000          SW13=   20000
                010000          SW12=   10000
                004000          SW11=   4000
                002000          SW10=   2000
                001000          SW09=   1000
                000400          SW08=   400
                000200          SW07=   200
                000100          SW06=   100
                000040          SW05=   40
                000020          SW04=   20
                000010          SW03=   10
                000004          SW02=   4
                000002          SW01=   2
                000001          SW00=   1
                                .EQUIV  SW09,SW9
                                .EQUIV  SW08,SW8
                                .EQUIV  SW07,SW7
                                .EQUIV  SW06,SW6
                                .EQUIV  SW05,SW5
                                .EQUIV  SW04,SW4
                                .EQUIV  SW03,SW3
                                .EQUIV  SW02,SW2
                                .EQUIV  SW01,SW1
                                .EQUIV  SW00,SW0

                                ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
                100000          BIT15=  100000
                040000          BIT14=  40000
                020000          BIT13=  20000
                010000          BIT12=  10000
                004000          BIT11=  4000
                002000          BIT10=  2000
                001000          BIT09=  1000
                000400          BIT08=  400
                000200          BIT07=  200
                000100          BIT06=  100
                000040          BIT05=  40
                000020          BIT04=  20
                000010          BIT03=  10
                000004          BIT02=  4
                000002          BIT01=  2
                000001          BIT00=  1
                                .EQUIV  BIT09,BIT9
                                .EQUIV  BIT08,BIT8
                                .EQUIV  BIT07,BIT7
                                .EQUIV  BIT06,BIT6
                                .EQUIV  BIT05,BIT5
                                .EQUIV  BIT04,BIT4
                                .EQUIV  BIT03,BIT3
                                .EQUIV  BIT02,BIT2
                                .EQUIV  BIT01,BIT1
                                .EQUIV  BIT00,BIT0

                                ;*BASIC "CPU" TRAP VECTOR ADDRESSES
```

```
   665          000004                  ERRVEC= 4               ;;TIME OUT AND OTHER ERRORS
   666          000010                  RESVEC= 10              ;;RESERVED AND ILLEGAL INSTRUCTIONS
   667          000014                  TBITVEC=14              ;;"T" BIT
   668          000014                  TRTVEC= 14              ;;TRACE TRAP
   669          000014                  BPTVEC= 14              ;;BREAKPOINT TRAP (BPT)
   670          000020                  IOTVEC= 20              ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
   671          000024                  PWRVEC= 24              ;;POWER FAIL
   672          000030                  EMTVEC= 30              ;;EMULATOR TRAP (EMT) **ERROR**
   673          000034                  TRAPVEC=34              ;;"TRAP" TRAP
   674          000060                  TKVEC=  60              ;;TTY KEYBOARD VECTOR
   675          000064                  TPVEC=  64              ;;TTY PRINTER VECTOR
   676          000240                  PIRQVEC=240             ;;PROGRAM INTERRUPT REQUEST VECTOR
```

```
                                ;TA11 FUNCTIONS
000000                          WFG=    0               ;WRITE FILE GAP FUNCTION
000002                          WRITE=  2               ;WRITE FUNCTION
000004                          READ=   4               ;READ FUNCTION
000006                          BSFG=   6               ;BACK SPACE FILE GAP FUNCTION
000010                          BSBG=   10              ;BACK SPACE BLOCK GAP FUNCTION
000012                          SFFG=   12              ;SPACE FWD FILE GAP FUNCTION
000014                          SFBG=   14              ;SPACE FWD BLOCK GAP FUNCTION
000016                          REWIND= 16              ;REWIND FUNCTION
                                ;;**************************************************************

                                ;TA11 BIT ASSIGNMENT
100000                          ERROR=  BIT15
040000                          CRCERR= BIT14
020000                          LEADER= BIT13
010000                          WRTLOCK=BIT12
004000                          FGAP=   BIT11
002000                          TIMERR= BIT10
001000                          OFFLINE=BIT09
000400                          UNIT=   BIT08
000200                          TR.REQ= BIT07
000100                          INT.EN= BIT06
000040                          READY=  BIT05
000020                          ILBS=   BIT04
000010                          FUNC2=  BIT03
000004                          FUNC1=  BIT02
000002                          FUNC0=  BIT01
000001                          GO=     BIT00
000016                          FUNCTION=       FUNC2+FUNC1+FUNC0
                                ;////////////////////////////////////////////////////////////////
                                ;////////////////////////////////////////////////////////////////
                                ;////////////////////////////////////////////////////////////////

                                ;SPECIAL REGISTERS
000003                          DRIVE=  %3              ;R3 CONTAINS THE DRIVE UNDER TEST
000004                          TACS=   %4              ;R4 IS USED AS A POINTER TO THE TACS REGISTER
000005                          TADB=   %5              ;R5 IS USED AS A POINTER TO THE TADB REGISTER.

                                ;////////////////////////////////////////////////////////////////
                                ;////////////////////////////////////////////////////////////////
```

```
                                        .SBTTL  TRAP CATCHER

                    000000                      .=0
                                        ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ".+2,HALT"
                                        ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
                                        ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
                    000174                      .=174
000174  000000             DISPREG:   .WORD  0                ;;SOFTWARE DISPLAY REGISTER
000176  000000             SWREG:     .WORD  0                ;;SOFTWARE SWITCH REGISTER
                                        .SBTTL  STARTING ADDRESS(ES)
000200  000137  001356             JMP     @#BEGIN1           ;;JUMP TO STARTING ADDRESS OF PROGRAM
000204  000137  001410             JMP     @#BEGIN2                ;SELECT DRIVE(S) BEFORE STARTING TEST
000210  000137  001416             JMP     @#BEGIN3                ;SELECT DRIVE(S) AND ADDRESSES BEFORE TESTING
000214  000137  001424             JMP     @#BEGIN4                ;SETUP FOR MANUAL LOOPING
000220  000137  012622             JMP     @#WFGSUB                ;WRITE FILE GAP FROM BOT TO EOT
000224  000137  012706             JMP     @#WRTSUB                ;WRITE CONTINUOUS BLOCKS OF DATA
000230  000137  012774             JMP     @#RDSUB                 ;READ CONTINUOUS BLOCKS OF DATA
000234  000137  013054             JMP     @#WGPBLK                ;WRITE FILE GAP AND A BLOCK OF DATA
000240  000137  013156             JMP     @#RGPBLK                ;READ BLOCK OF DATA AND INTO A FILE GAP
000244  000137  013252             JMP     @#SFFGSB                ;SPACE FWD FILE GAP FROM BOT TO EOT
000250  000137  013336             JMP     @#BSFGSB                ;BACK SPACE FILE GAPS
```

```
                                ;////////////////////////////////////////////////////////////////////////
                                ;////////////////////////////////////////////////////////////////////////

                                ;THE FOLLOWING ROUTINES CAN BE TOGGLED IN.

                                ;////////////////////////////////////////////////////////////////////////

                                        .REM    !


                                        THE FOLLOWING ROUTINES (LOOP1, LOOP2, & LOOP3) CAN BE TOGGLED
                                        IN WHEN IT IS IMPOSSIBLE TO LOAD THE DIAGNOSTICS

                                        NOTE:   BEFORE USING THESE ROUTINES INSURE THAT R3,R4,& R5
                                                ARE SETUP PROPERLY.

                                        ** NOTE: IF USING SOFTWARE SWITCH REGISTER
                                                LOCATION SWR (=1140) MUST CONTAIN
                                                ADDRESS "SWREG" (=176).
                                                *****  PUT VALUE INTO 176    *****
                                                ** REGISTERS 3,4,&5 MUST BE SETUP **
                                                ** VIA MOVE INSTRUCTIONS **
                                        R3=       0 IF USING DRIVE A
                                                400 IF USING DRIVE B

                                        R4=     TA11 STATUS REG ADDRESS (TACS 177500)

                                        R5=     TA11 DATA BUFFER ADDRESS (TADB 177502)

                                        LOOP1 WILL LOAD THE SWITCH REGISTER INTO THE TACS.

                                        LOOP2 WILL WRITE THE CONTENTS OF THE SWITCH REGISTER
                                        ALL THE WAY TO END-OF-TAPE(EOT).

                                        LOOP3 WILL READ TO EOT. DATA WILL GO TO R0.

                                        NOTE:   LOOP2 AND LOOP3 WILL REWIND WHEN EOT IS REACHED AND
                                                THEN START OVER.
                                !

                                ;;**********************************************************************

                                        ;LOAD SWITCH REGISTER INTO THE TACS
                                ;;**********************************************************************

                 000500                 .=500

000500  017714  000434          LOOP1:  MOV     @SWR,@TACS              ;LOAD TACS
000504  000775                  BR      LOOP1                   ;LOOP
```

```
                                ;;*****************************************************************
                                ;WRITE SWITCH REGISTER ON TAPE FROM BOT TO EOT
                                ;;*****************************************************************
                        000600  .=600
000600  000005  LOOP2:  RESET                           ;CLEAR ALL FLAGS
000602  010314          MOV     DRIVE,@TACS             ;SELECT DRIVE
000604  112714  000017  MOVB    #REWIND!GO,@TACS        ;GO TO BOT
000610  032714  000040  1$:     BIT     #READY,@TACS    ;WAIT TILL READY COMES UP
000614  001775          BEQ     1$
000616  112714  000003  MOVB    #WRITE!GO,@TACS         ;START A WRITE
000622  105714  2$:     TSTB    @TACS                   ;CHECK FOR TRANSFER REQUEST
000624  100003          BPL     3$                      ;BR IF NOT SET
000626  017715  000306  MOV     @SWR,@TADB              ;SEND DATA TO TA11
000632  000773          BR      2$                      ;LOOP
000634  032714  000040  3$:     BIT     #READY,@TACS    ;DID READY SET?
000640  001357          BNE     LOOP2                   ;START OVER IF YES
000642  000767          BR      2$                      ;LOOP

                                ;;*****************************************************************
                                ;READ FROM BOT TO EOT
                                ;;*****************************************************************
                        000700  .=700

000700  000005  LOOP3:  RESET                           ;CLEAR ALL FLAGS
000702  010314          MOV     DRIVE,@TACS             ;SELECT DRIVE
000704  112714  000017  MOVB    #REWIND!GO,@TACS        ;START A REWIND
000710  032714  000040  1$:     BIT     #READY,@TACS    ;WAIT ON REWIND TO FINISH
000714  001775          BEQ     1$
000716  112714  000005  MOVB    #READ!GO,@TACS          ;START A READ
000722  105714  2$:     TSTB    @TACS                   ;CHECK TRANSFER REQ
000724  100002          BPL     3$                      ;BR IF NOT SET
000726  011500          MOV     @TADB,R0                ;PICKUP THE DATA
000730  000774          BR      2$                      ;LOOP
000732  032714  000040  3$:     BI      #READY,@TACS    ;CHECK READY
000736  001360          BNE     LOOP3                   ;START OVER
000740  000770          BR      2$                      ;LOOP
```

```
                                .SBTTL  COMMON TAGS

                                ;;**************************************************************
                                ;*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
                                ;*USED IN THE PROGRAM.

                                        .=1100
001100                          $CMTAG:                         ;;START OF COMMON TAGS
001100  000000                  $PASS:  .WORD   0               ;;CONTAINS PASS COUNT
001102  000                     $TSTNM: .BYTE   0               ;;CONTAINS THE TEST NUMBER
001103  000                     $ERFLG: .BYTE   0               ;;CONTAINS ERROR FLAG
001104  000000                  $ICNT:  .WORD   0               ;;CONTAINS SUBTEST ITERATION COUNT
001106  000000                  $LPADR: .WORD   0               ;;CONTAINS SCOPE LOOP ADDRESS
001110  000000                  $LPERR: .WORD   0               ;;CONTAINS SCOPE RETURN FOR ERRORS
001112  000000                  $ERTTL: .WORD   0               ;;CONTAINS TOTAL ERRORS DETECTED
001114  000                     $ITEMB: .BYTE   0               ;;CONTAINS ITEM CONTROL BYTE
001115  001                     $ERMAX: .BYTE   1               ;;CONTAINS MAX. ERRORS PER TEST
001116  000000                  $ERRPC: .WORD   0               ;;CONTAINS PC OF LAST ERROR INSTRUCTION
001120  000000                  $GDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'GOOD' DATA
001122  000000                  $BDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'BAD' DATA
001124  000000                  $GDDAT: .WORD   0               ;;CONTAINS 'GOOD' DATA
001126  000000                  $BDDAT: .WORD   0               ;;CONTAINS 'BAD' DATA
001130  000000                          .WORD   0               ;;RESERVED--NOT TO BE USED
001132  000000                          .WORD   0
001134  000                     $AUTOB: .BYTE   0               ;;AUTOMATIC MODE INDICATOR
001135  000                     $INTAG: .BYTE   0               ;;INTERRUPT MODE INDICATOR
001136  000000                          .WORD   0
001140  177570                  SWR:    .WORD   DSWR            ;;ADDRESS OF SWITCH REGISTER
001142  177570                  DISPLAY: .WORD  DDISP           ;;ADDRESS OF DISPLAY REGISTER
001144  177560                  $TKS:   177560                  ;;TTY KBD STATUS
001146  177562                  $TKB:   177562                  ;;TTY KBD BUFFER
001150  177564                  $TPS:   177564                  ;;TTY PRINTER STATUS REG. ADDRESS
001152  177566                  $TPB:   177566                  ;;TTY PRINTER BUFFER REG. ADDRESS
001154  000                     $NULL:  .BYTE   0               ;;CONTAINS NULL CHARACTER FOR FILLS
001155  002                     $FILLS: .BYTE   2               ;;CONTAINS # OF FILLER CHARACTERS REQUIRED
001156  012                     $FILLC: .BYTE   12              ;;INSERT FILL CHARS. AFTER A "LINE FEED"
001157  000                     $TPFLG: .BYTE   0               ;;"TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
001160  000000                  $REGAD: .WORD   0               ;;CONTAINS THE ADDRESS FROM
                                                                ;;WHICH  ($REG0) WAS OBTAINED
001162  000000                  $REG0:  .WORD   0               ;;CONTAINS (($REGAD)+0)
001164  000000                  $REG1:  .WORD   0               ;;CONTAINS (($REGAD)+2)
001166  000000                  $TIMES: 0                       ;;MAX. NUMBER OF ITERATIONS
001170  000000                  $ESCAPE:0                       ;;ESCAPE ON ERROR ADDRESS
001172  177607  000377           $BELL:  .ASCIZ  <207><377><377> ;;CODE FOR BELL
001176  077                     $QUES:  .ASCII  /?/             ;;QUESTION MARK
001177  015                     $CRLF:  .ASCII  <15>            ;;CARRIAGE RETURN
001200  000012                  $LF:    .ASCIZ  <12>            ;;LINE FEED
                                ;;**************************************************************
001202  000000                  SAVPC:  .WORD   0                       ;STORAGE FOR THE PC
001204  000000                  SAVPS:  .WORD   0                       ;STORAGE FOR THE PS
001206  177500                  TACSL:  177500                          ;LOW BYTE ADDRESS OF TACS
001210  177501                  TACSH:  177501                          ;HIGH BYTE ADDRESS OF TACS
001212  177502                  TADBL:  177502                          ;LOW BYTE ADDRESS OF TADB
001214  177503                  TADBH:  177503                          ;HIGH BYTE ADDRESS OF TADB
001216  000260  000262          TAVEC:  260,262                         ;TA11 VECTOR ADDRESS
001222  000300                  TAPRIO: 300                             ;TA11 BR LEVEL 6
```

```
   888  001224  000000  000000          DRVKEY: 0,0                     ;DRIVE SELECT KEY:
   889  001230  001224                  DRVPNT: DRVKEY
   890  001232  000000                  ASKKEY: 0
   891  001234  000000                  CURDRV: 0                       ;CURRENT DRIVE BEING TESTED
```

```
                                        .SBTTL  ERROR POINTER TABLE

                                        ;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
                                        ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
                                        ;*LOCATION $ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
                                        ;*NOTE1:        IF $ITEMB IS 0 THE ONLY PERTINENT DATA IS ($ERRPC).
                                        ;*NOTE2:        EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:

                                        ;*      EM              ;;POINTS TO THE ERROR MESSAGE
                                        ;*      DH              ;;POINTS TO THE DATA HEADER
                                        ;*      DT              ;;POINTS TO THE DATA
                                        ;*      DF              ;;POINTS TO THE DATA FORMAT


001236                                  $ERRTB:

                                        ;NOTE:  ALL NUMBERS ARE TYPED AS 6-DIGIT OCTAL NUMBERS

                                        ;ITEM   1
001236  015712                                  EM1     ;STATUS PROBLEM
001240  016124                                  DH1     ;PC     TACS
001242  016272                                  DT1     ;$ERRPC $REGO
001244  000000                                  0

                                        ;ITEM   2
001246  015731                                  EM2     ;READY FAILED TO SET
001250  016141                                  DH2     ;PC     TACS    WAIT ADDRESS
001252  016300                                  DT2     ;$ERRPC $REGO   SAVPC
001254  000000                                  0

                                        ;ITEM   3
001256  015757                                  EM3     ;TRANSFER REQUEST FAILED TO SET
001260  016141                                  DH2     ;PC     TACS    WAIT ADDRESS
001262  016300                                  DT2     ;$ERRPC $REGO   SAVPC
001264  000000                                  0

                                        ;ITEM   4
001266  016020                                  EM4     ;THE WRONG FLAG SET
001270  016141                                  DH2     ;PC     TACS    WAIT ADDRESS
001272  016300                                  DT2     ;$ERRPC $REGO   SAVPC
001274  000000                                  0

                                        ;ITEM   5
001276  016043                                  EM5     ;COUNT PATTERN FAILED
001300  016176                                  DH5     ;PC     TACS    EXPECT  RCV'D
001302  016310                                  DT5     ;$ERRPC $REGO   $GDDAT  $BDDAT
001304  000000                                  0

                                        ;ITEM   6
001306  016070                                  EM6     ;DATA PROBLEM
001310  016234                                  DH6     ;PC     TADB
001312  016322                                  DT6     ;$ERRPC $REG1
001314  000000                                  0

                                        ;ITEM   7
001316  016070                                  EM6     ;DATA PROBLEM
```

```
  948  001320  016176                        DH5     ;PC     TACS    EXPECT  RCV'D
  949  001322  016310                        DT5     ;$ERRPC $REGO   $GDDAT  $BDDAT
  950  001324  000000                        0
  951
  952                                ;ITEM   10
  953  001326  016105                        EM10    ;ADDRESS FAILED
  954  001330  016251                        DH10    ;PC     ADDRESS
  955  001332  016330                        DT10    ;$ERRPC $BDADR
  956  001334  000000                        0
  957
  958  001336                             ITEMS2:    ;ITEMS 201-202
  959
  960  001336  016350                        EM201   ;TA11 FAILED TO RESPOND
  961  001340  016422                        DH201   ;PC     TACS
  962  001342  016336                        DT201   ;$ERRPC TACS
  963  001344  000000                        0       ;BOTH NUMBERS ARE TYPED AS OCTAL NUMBERS
  964
  965  001346  016377                        EM202   ;NO DRIVES AVAILABLE
  966  001350  016437                        DH202   ;PC
  967  001352  016344                        DT202   ;$ERRPC
  968  001354  000000                        0       ;
  969
```

```
                                        ;////////////////////////////////////////////////////////////////////
                                        ;////////////////////////////////////////////////////////////////////
                                        ;;******************************************************************

                                        ;BEGIN1 IS FOR NORMAL START
                                        ;BEGIN2 IS FOR DRIVE SELECTION
                                        ;BEGIN3 IS FOR DRIVE & ADDRESS SELECTION
                                        ;BEGIN4 IS FOR MANUAL OPERATION

                                        ;;******************************************************************
001356  005005                  BEGIN1: CLR     R5                      ;NORMAL START
001360  012737  041101  001224          MOV     #"AB,@#DRVKEY
001366  122737  000005  000041          CMPB    #5,@#41                 ;CASSETTE DDP?
001374  001015                          BNE     BGNCMN                  ;GO BEGIN COMMON CODE IF NO
001376  022737  000260  001216          CMP     #260,@#TAVEC            ;STANDARD VECTOR?
001404  001011                          BNE     BGNCMN                  ;GO BEGIN COMMON CODE IF NO
001406  000403                          BR      BEGIN3                  ;GET DRIVES AND ADDRESSES
001410  012705  000001          BEGIN2: MOV     #1,R5                   ;ASK FOR DRIVES FLAG
001414  000405                          BR      BGNCMN                  ;BEGIN COMMON CODE
001416  012705  000002          BEGIN3: MOV     #2,R5                   ;ASK FOR DRIVES AND ADDRESSES
001422  000402                          BR      BGNCMN
001424  012705  000003          BEGIN4: MOV     #3,R5
001430                          BGNCMN:
                                        .SBTTL  INITIALIZE THE COMMON TAGS
                                        ;;CLEAR THE COMMON TAGS ($CMTAG) AREA
001430  012706  001100                  MOV     #$CMTAG,R6      ;;FIRST LOCATION TO BE CLEARED
001434  005026                          CLR     (R6)+           ;;CLEAR MEMORY LOCATION
001436  022706  001140                  CMP     #SWR,R6 ;;DONE?
001374                                  BNE     .-6             ;;LOOP BACK IF NO
001000  012706  001100                  MOV     #STACK,SP       ;;SETUP THE STACK POINTER
                                        ;;INITIALIZE A FEW VECTORS
001450  012737  [illegible] 000020      MOV     #$SCOPE,@#IOTVEC ;;IOT VECTOR FOR SCOPE ROUTINE
001456  012737  000[illegible] 000022   MOV     #340,@#IOTVEC+2 ;;LEVEL 7
001464  012737  011504  [illegible]      MOV     #$ERROR,@#EMTVEC ;;EMT VECTOR FOR ERROR ROUTINE
001472  012737  000340  0000[illegible]  MOV     #340,@#EMTVEC+2 ;;LEVEL 7
001500  012737  015322  000034          MOV     #$TRAP,@#TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
001506  012737  000340  000036                  -340,@#TRAPVEC+2;LEVEL 7
001514  012737  015406  000024          MOV     #$PWRDN,@#PWRVEC ;;POWER FAILURE VECTOR
001522  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;LEVEL 7
001530  016767  007424  007414          MOV     $ENDCT,$EOPCT   ;;SETUP END-OF-PROGRAM COUNTER
001536  005067  177424                  CLR     $TIMES          ;;INITIALIZE NUMBER OF ITERATIONS
001542  005067  177422                  CLR     $ESCAPE         ;;CLEAR THE ESCAPE ON ERROR ADDRESS
001546  112767  000001  177341          MOVB    #1,$ERMAX       ;;ALLOW ONE ERROR PER TEST
001554  012767  001554  177324          MOV     #.,$LPADR       ;;INITIALIZE THE LOOP ADDRESS FOR SCOPE
001562  012767  001562  177320          MOV     #.,$LPERR       ;;SETUP THE ERROR LOOP ADDRESS
                                        ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
                                        ;;EQUAL TO A "-1"  SETUP FOR A SOFTWARE SWITCH REGISTER.
001570  013746  000004                  MOV     @#ERRVEC,-(SP)  ;;SAVE ERROR VECTOR
001574  012737  001630  000004          MOV     #64$,@#ERRVEC   ;;SET UP ERROR VECTOR
001602  012767  177570  177330          MOV     #DSWR,SWR       ;;SETUP FOR A HARDWARE SWICH REGISTER
001610  012767  177570  177324          MOV     #DDISP,DISPLAY  ;;AND A HARDWARE DISPLAY REGISTER
001616  022777  177777  177314          CMP     #-1,@SWR        ;;TRY TO REFERENCE HARDWARE SWR
001624  001012                          BNE     66$             ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
                                                                ;;AND  THE HARDWARE SWR IS NOT = -1
001626  000403                          BR      65$             ;;BRANCH IF NO TIMEOUT
```

```
1026  001630  012716  001636          64$:    MOV     #65$,(SP)       ;;SET UP FOR TRAP RETURN
1027  001634  000002                          RTI
1028  001636  012767  000176  177274  65$:    MOV     #SWREG,SWR      ;;POINT TO SOFTWARE SWR
1029  001644  012767  000174  177270          MOV     #DISPREG,DISPLAY
1030  001652  012637  000004          66$:    MOV     (SP)+,@#ERRVEC  ;;RESTORE ERROR VECTOR
1031
1032                                  .SBTTL  TYPE PROGRAM NAME
1033                                  ;;TYPE THE NAME OF THE PROGRAM IF FIRST PASS
1034  001656  005227  177777                  INC     #-1             ;;FIRST TIME?
1035  001662  001036                          BNE     HERE            ;;BRANCH IF NO
1036  001664  022737  011200  000042          CMP     #$ENDAD,@#42    ;;ACT-11?
1037  001672  001432                          BEQ     HERE            ;;BRANCH IF YES
1038  001674  104401  001732                  TYPE    ,MSGID          ;;TYPE ASCIZ STRING
1039                                  .SBTTL  GET VALUE FOR SOFTWARE SWITCH REGISTER
1040  001700  005737  000042                  TST     @#42            ;;ARE WE RUNNING UNDER XXDP/ACT?
1041  001704  001006                          BNE     67$             ;;BRANCH IF YES
1042  001706  026727  177226  000176          CMP     SWR,#SWREG      ;;SOFTWARE SWITCH REG SELECTED?
1043  001714  001005                          BNE     68$             ;;BRANCH IF NO
1044  001716  104405                          GTSWR                   ;;GET SOFT-SWR SETTINGS
1045  001720  000403                          BR      68$
1046  001722  112767  000001  177204  67$:    MOVB    #1,$AUTOB       ;;SET AUTO-MODE INDICATOR
1047  001730                          68$:
1048  001730  000413                          BR      HERE            ;;GET OVER THE ASCIZ
1049                                  ;;MSGID:        .ASCIZ  <CRLF>/MAINDEC-11-DZTAA-C/<CRLF>
1050  001760                          HERE:
```

```
1051                                    ;;*****************************************************************
1052                                    ;;*****************************************************************
1053
1054                                    ;THE CONTENTS OF R5 DETERMINES WHAT WILL BE DONE
1055                                    ;
1056                                    ;       R5=3    MANUAL OPERATIONS
1057                                    ;       R5=2    ASK FOR DRIVE(S) AND ADDRESSES (TACS AND VECTOR)
1058                                    ;       R5=1    ASK FOR DRIVE(S)
1059                                    ;       R5=0    DON'T ASK FOR ANYTHING
1060                                    ;
1061                                    ;;*****************************************************************
1062  001760  010504                   BEGINX: MOV     R5,R4                   ;COPY R5
1063  001762  005305                           DEC     R5                      ;ASK FOR DRIVES?
1064  001764  002406                           BLT     CHKADR                  ;BR IF NO
1065  001766  004737  012222                   JSR     PC,@#ASKDRV             ;GO GET DRIVES TO BE TESTED
1066  001772  005305                           DEC     R5                      ;ASK FOR ADDRESSES?
1067  001774  002402                           BLT     CHKADR                  ;BR IF NO
1068  001776  004737  012232                   JSR     PC,@#ASKADR             ;GO GET TA11 ADDRESSES
1069                                    ;;*****************************************************************
1070                                    ;;*****************************************************************
1071
1072                                    ;CHECK THAT "TACS" WILL RESPOND TO ADDRESSING
1073                                    ;
1074                                    ;I.     TIMEOUT OCCURRED
1075                                    ;       A. TYPE ERROR MESSAGE
1076                                    ;       B. EXAMINE R4
1077                                    ;               1. R4>0 GOTO BEGINX
1078                                    ;               2. R4=0 EXAMINE (42)
1079                                    ;                       A. (42)=0 GOTO BEGINX
1080                                    ;                       B. (42)>0 GOTO $ENDAD
1081                                    ;
1082                                    ;II.    TIMEOUT DIDN'T OCCUR
1083                                    ;       A. CONTINUE
1084                                    ;
1085                                    ;;*****************************************************************
1086  002002  012737  002020  000004   CHKADR: MOV     #1$,@#ERRVEC            ;IN CASE OF TIMEOUTS
1087  002010  005000                           CLR     R0                      ;USE AS A SWITCH
1088  002012  005777  177170                   TST     @TACSL                  ;SEE IF TA11 RESPONDS
1089  002016  000402                           BR      2$                      ;BR IF NO TIMEOUT
1090  002020  005200                   1$:     INC     R0                      ;COME HERE ON TIMEOUT
1091  002022  022626                           CMP     (SP)+,(SP)+             ;CLEANUP THE STACK
1092  002024  012737  000006  000004   2$:     MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TIMEOUT VECTOR
1093  002032  005700                           TST     R0                      ;DID A TIMEOUT OCCUR?
1094  002034  001412                           BEQ     3$                      ;BR IF NO
1095  002036  104201                           ERROR   201                     ;TA11 FAILED TO RESPOND
1096  002040  012705  000002                   MOV     #2,R5                   ;DRIVES & ADDRESSES
1097  002044  005704                           TST     R4                      ;OPERATOR INPUTS?
1098  002046  001344                           BNE     BEGINX                  ;BR IF YES
1099  002050  013700  000042                   MOV     @#42,R0                 ;GET MONITOR RETURN ADDRESS
1100  002054  001741                           BEQ     BEGINX                  ;BR IF NO MONITOR
1101  002056  000137  011200                   JMP     @#$ENDAD                ;GO TO END
1102  002062                           3$:
```

```
                                ;;*****************************************************************
                                ;;*****************************************************************

                                ;MAKE SURE THE DRIVES IN THE DRIVE TABLE CAN BE TESTED
                                ;
                                ;I.     DESIRED DRIVES CAN NOT BE TESTED
                                ;       A. TYPE ERROR MESSAGE
                                ;       B. EXAMINE R4
                                ;               1. R4>0 GOTO BEGINX
                                ;               2. R4=0 EXAMINE (42)
                                ;                       A. (42)=0 GOTO BEGINX
                                ;                       B. (42)>0 GOTO $ENDAD
                                ;
                                ;II.    BOTH DRIVES IN THE TABLE BUT ONLY ONE OF THEM CAN BE TESTED
                                ;       A. CLEAR BAD DRIVE FROM THE DRIVE TABLE
                                ;       B. CONTINUE IN PROGRAM
                                ;
                                ;III.   DESIRED DRIVE(S) CAN BE TESTED
                                ;       A. CONTINUE IN PROGRAM
                                ;
                                ;*****************************************************************
002062  012700  001224          CHKDRV: MOV     #DRVKEY,R0              ;PICKUP ADDRESS OF ASCII DRIVE KEY
002066  004737  013672                  JSR     PC,@#EXAM               ;GO EXAMINE FIRST DRIVE
002072  000410                          BR      1$                      ;OK TO TEST---GO CHECK NEXT
002074  116010  000001                  MOVB    1(R0),(R0)              ;REPLACE 1ST WITH 2ND
002100  001412                          BEQ     2$                      ;BR IF NO 2ND DRIVE SELECTED
002102  004737  013672                  JSR     PC,@#EXAM               ;GO EXAMINE DRIVE
002106  000407                          BR      2$                      ;OK TO TEST
002110  005010                          CLR     (R0)                    ;CLEAR DRIVE CODES
002112  000405                          BR      2$
002114  005200                  1$:     INC     R0                      ;POINT TO 2ND
002116  004737  013672                  JSR     PC,@#EXAM               ;GO EXAMINE DRIVE
002122  000401                          BR      2$                      ;OK TO TEST
002124  105010                          CLRB    (R0)                    ;CLEAR 2ND
002126  012700  001224          2$:     MOV     #DRVKEY,R0              ;RESET ADDRESS POINTERS
002132  010037  001230                  MOV     R0,@#DRVPNT
002136  121060  000001                  CMPB    (R0),1(R0)              ;1ST = 2ND?
002142  001002                          BNE     3$                      ;BR IF NO
002144  105060  000001                  CLRB    1(R0)                   ;YES---CLEAR 2ND
002150  005710                  3$:     TST     (R0)                    ;ANY DRIVES?
002152  001401                          BEQ     5$                      ;BR IF NO
002154  000412                          BR      MANUAL
002156  104202                  5$:     ERROR   202                     ;NO DRIVES AVAILABLE
002160  012705  000002                  MOV     #2,R5                   ;DRIVES & ADDRESS
002164  005704                          TST     R4                      ;OPERATOR INPUTS?
002166  001274                          BNE     BEGINX                  ;BR IF YES
002170  013700  000042                  MOV     @#42,R0                 ;GET MONITOR RETURN ADDRESS
002174  001671                          BEQ     BEGINX                  ;NO MONITOR
002176  000137  011200                  JMP     @#$ENDAD                ;GO TO END
002202  020427  000003          MANUAL: CMP R4,#3
002206  001002                          BNE     OK
002210  016704  175563                  MOV     -1,R4
002214  010437  001232          OK:     MOV     R4,@#ASKKEY
002220  000405                          BR START
002222  104401  001732          PWRST:  TYPE    ,MSGID                  ;POWER FAIL RESTART
002226  012737  001224  001230          MOV     #DRVKEY,@#DRVPNT
```

```
 1159  002234  013777  001220  176754  START:  MOV     @#TAVEC+2,@TAVEC        ;SETUP TA11 TRAP VECTOR
 1160  002242  005077  176752                  CLR     @TAVEC+2
 1161  002246  012737  000340  177776          MOV     #340,@#PS               ;LOCKOUT ALL I/O INT
 1162  002254  013704  001206                  MOV     @#TACSL,TACS            ;SETUP TACS
 1163  002260  013705  001212                  MOV     @#TADBL,TADB            ;SETUP TADB
 1164  002264  005737  001100                  TST     @#$PASS                 ;IF FIRST PASS SETUP FOR EXTRA LONG WAIT LOOPS
 1165  002270  001024                          BNE     1$                      ;OTHERWISE USE OLD VALUES
 1166  002272  012737  077777  012116          MOV     #^CBIT15,@#MAXCNT
 1167  002300  005737  000042                  TST     @#42                    ;UNDER MONITOR CONTROL?
 1168  002304  001016                          BNE     1$                      ;SKIP TYPEOUT IF YES
 1169  002306  104401  002314                  TYPE    ,65$            ;;TYPE ASCIZ STRING
 1170  002312  000413                          BR      64$             ;;GET OVER THE ASCIZ
 1171                                  ;;65$:  .ASCIZ  <15><12>/DO A MANUAL REWIND/
 1172  002342                          64$:
 1173  002342  005037  001102          1$:     CLR     @#$TSTNM                ;ZERO THE TEST NUMBER
 1174  002346  005003                          CLR     DRIVE                   ;SET DRIVE TO "A"
 1175  002350  013701  001230                  MOV     @#DRVPNT,R1             ;GET DRIVE POINTER
 1176  002354  121127  000101                  CMPB    (R1),#'A                ;IS IT DRIVE "A"?
 1177  002360  001402                          BEQ     TDRV                    ;BR IF YES
 1178  002362  012703  000400                  MOV     #UNIT,DRIVE             ;SET DRIVE TO "B"
 1179  002366                          TDRV:
 1180  002366  104401  002374                  TYPE    ,65$            ;;TYPE ASCIZ STRING
 1181  002372  000411                          BR      64$             ;;GET OVER THE ASCIZ
 1182                                  ;;65$:  .ASCIZ  <15><12>*TESTING DRIVE *
 1183  002416                          64$:
 1184  002416  112167  176612                  MOVB    (R1)+,CURDRV            ;SETUP TO TYPE CURRENT DRIVE
 1185  002422  104401  001234                  TYPE    ,CURDRV
 1186  002426  104401  001177                  TYPE    ,$CRLF                  ;TYPE A  CR & LF
 1187  002432  105711                          TSTB    (R1)                    ;LAST DRIVE BEEN SELECTED
 1188  002434  001002                          BNE     1$                      ;BR IF NO
 1189  002436  012701  001224                  MOV     #DRVKEY,R1              ;RESET DRIVE POINTER
 1190  002442  010137  001230          1$:     MOV     R1,@#DRVPNT             ;SAVE DRIVE POINTER FOR NEXT TIME
 1191  002446  005737  001232                  TST     @#ASKKEY                ;GO START TESTING IF NO MANUAL
 1192  002452  002007                          BGE     2$                      ;       OPERATIONS REQUESTED
 1193  002454  005000                          CLR     R0
 1194  002456  000000                          HALT                            ;GIVE CONTROL TO THE OPERATOR
 1195  002460  022767  000176  176452          CMP     #SWREG,SWR              ;SOFTWARE SWITCH REG.?
 1196  002466  001001                          BNE     20$                     ;NO - LET HIM GO
 1197  002470  104405                          GTSWR                           ;GET NEW SWR VALUE
 1198  002472                          20$:
 1199                                  ;THIS CODE IS FOR ACT11 & DOP
 1200  002472  005737  000042          2$:     TST     @#42                    ;IS THERE A MONITOR?
 1201  002476  001406                          BEQ     TST1                    ;GO START TESTING IF NO
 1202  002500  010314                          MOV     DRIVE,@TACS             ;IF YES SELECT DRIVE
 1203  002502  112714  000017                  MOVB    #REWIND!GO,@TACS        ;SEND TAPE TO BOT
 1204  002506  032714  000040          3$:     BIT     #READY,@TACS            ;WAIT ON READY
 1205  002512  001775                          BEQ     3$                      ;FALL THRU IF READY=1
```

```
1206                                    ;////////////////////////////////////////////////////////////////////////
1207                                    ;////////////////////////////////////////////////////////////////////////
1208                                    ;THE FOLLOWING TESTS WILL CHECK THE TA11
1209                                    ;STATUS (TACS) AND DATA BUFFER (TADB) REGISTERS
1210                                    ;TO INSURE THAT THEY RESPOND TO ADDRESSING.
1211                                    ;////////////////////////////////////////////////////////////////////////
1212
1213                                    ;;**********************************************************************
1214                                                    ;TA11 REGISTER ADDRESS TEST
1215                                                    ;INSURE THAT TACS RESPONDS TO ADDRESSING
1216                                    ;;**********************************************************************
1217                                    ;*TEST 1         TEST IF TACS EXIST
1218                                    ;;**********************************************************************
1219  002514  000004                    TST1:   SCOPE
1220  002516  012767  000001  176442            MOV     #1,$TIMES       ;;DO 1 ITERATION
1221  002524  012706  001100                    MOV     #STACK,SP               ;SETUP THE STACK POINTER
1222  002530  012737  002542  000004            MOV     #1$,@#ERRVEC            ;SETUP FOR BUS TIMEOUT
1223  002536  005014                            CLR     @TACS                   ;TACS ARE YOU THERE?
1224  002540  000420                            BR      2$                      ;YES -- NO TRAP
1225  002542  012737  000006  000004  1$:       MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
1226  002550  022626                            CMP     (SP)+,(SP)+             ;CLEAN UP THE STACK
1227  002552  013746  000030                    MOV     @#EMTVEC,-(SP)          ;SETUP FOR THIS ERROR CALL
1228  002556  012737  011516  000030            MOV     #ERROR1,@#EMTVEC                ;SKIP OVER THE SAVE OF TACS AND TADB
1229  002564  010437  001122                    MOV     TACS,@#$BDADR           ;GET THE FAILING ADDRESS
1230  002570  104010                            ERROR   10                      ;ERROR -- TIME OUT OCCURRED
1231                                                                            ;WHEN ADDRESSING THE TACS REGISTER
1232  002572  012637  000030                    MOV     (SP)+,@#EMTVEC          ;RESTORE THE ERROR CALLS VECTOR
1233  002576  000137  011124                    JMP     @#$EOP                  ;GO TO END OF PROGRAM
1234  002602  012737  000006  000004  2$:       MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
1235
1236                                    ;;**********************************************************************
1237                                                    ;TA11 REGISTER ADDRESS TEST
1238                                                    ;INSURE THAT TADB RESPONDS TO ADDRESSING
1239                                    ;;**********************************************************************
1240                                    ;*TEST 2         TEST IF TADB EXIST
1241                                    ;;**********************************************************************
1242  002610  000004                    TST2:   SCOPE
1243  002612  012767  000001  176346            MOV     #1,$TIMES       ;;DO 1 ITERATION
1244  002620  012706  001100                    MOV     #STACK,SP               ;SETUP THE STACK POINTER
1245  002624  012737  002636  000004            MOV     #1$,@#ERRVEC            ;SETUP FOR BUS TIMEOUT
1246  002632  005015                            CLR     @TADB                   ;TADB ARE YOU THERE?
1247  002634  000420                            BR      2$                      ;YES -- NO TRAP
1248  002636  012737  000006  000004  1$:       MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
1249  002644  022626                            CMP     (SP)+,(SP)+             ;CLEAN UP THE STACK
1250  002646  013746  000030                    MOV     @#EMTVEC,-(SP)          ;SETUP FOR THIS ERROR CALL
1251  002652  012737  011516  000030            MOV     #ERROR1,@#EMTVEC                ;SKIP OVER THE SAVE OF TACS AND TADB
1252  002660  010537  001122                    MOV     TADB,@#$BDADR           ;GET THE FAILING ADDRESS
1253  002664  104010                            ERROR   10                      ;ERROR -- TIME OUT OCCURRED
1254                                                                            ;WHEN ADDRESSING THE TADB REGISTER
1255  002666  012637  000030                    MOV     (SP)+,@#EMTVEC          ;RESTORE THE ERROR CALLS VECTOR
1256  002672  000137  011124                    JMP     @#$EOP                  ;GO TO END OF PROGRAM
1257  002676  012737  000006  000004  2$:       MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
```

```
1258
1259                                    ;;*****************************************************************
1260                                    ;TA11 REGISTER ADDRESS TEST
1261                                    ;INSURE THAT TACS RESPONDS TO ADDRESSING
1262                                    ;;*****************************************************************
1263                                    ;*TEST 3        TEST FOR LOW BYTE OF TACS
1264                                    ;;*****************************************************************
1265  002704  000004                    TST3:   SCOPE
1266  002706  012767  000001  176252            MOV     #1,$TIMES       ;;DO 1 ITERATION
1267  002714  012706  001100                    MOV     #STACK,SP               ;SETUP THE STACK POINTER
1268  002720  012737  002732  000004            MOV     #1$,@#ERRVEC            ;SETUP FOR BUS TIMEOUT
1269  002726  105014                            CLRB    @TACS                   ;TACS ARE YOU THERE?
1270  002730  000420                            BR      2$                      ;YES -- NO TRAP
1271  002732  012737  000006  000004  1$:       MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
1272  002740  022626                            CMP     (SP)+,(SP)+             ;CLEAN UP THE STACK
1273  002742  013746  000030                    MOV     @#EMTVEC,-(SP)          ;SETUP FOR THIS ERROR CALL
1274  002746  012737  011516  000030            MOV     #ERROR1,@#EMTVEC                ;SKIP OVER THE SAVE OF TACS AND TADB
1275  002754  010437  001122                    MOV     TACS,@#$BDADR           ;GET THE FAILING ADDRESS
1276  002760  104010                            ERROR   10                      ;ERROR -- TIME OUT OCCURRED
1277                                                                            ;WHEN ADDRESSING THE TACS REGISTER
1278  002762  012637  000030                    MOV     (SP)+,@#EMTVEC          ;RESTORE THE ERROR CALLS VECTOR
1279  002766  000137  011124                    JMP     @#$EOP                  ;GO TO END OF PROGRAM
1280  002772  012737  000006  000004  2$:       MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
1281
1282                                    ;;*****************************************************************
1283                                    ;TA11 REGISTER ADDRESS TEST
1284                                    ;INSURE THAT TADB RESPONDS TO ADDRESSING
1285                                    ;;*****************************************************************
1286                                    ;*TEST 4        TEST FOR LOW BYTE OF TADB
1287                                    ;;*****************************************************************
1288  003000  000004                    TST4:   SCOPE
1289  003002  012767  000001  176156            MOV     #1,$TIMES       ;;DO 1 ITERATION
1290  003010  012706  001100                    MOV     #STACK,SP               ;SETUP THE STACK POINTER
1291  003014  012737  003026  000004            MOV     #1$,@#ERRVEC            ;SETUP FOR BUS TIMEOUT
1292  003022  105015                            CLRB    @TADB                   ;TADB ARE YOU THERE?
1293  003024  000420                            BR      2$                      ;YES -- NO TRAP
1294  003026  012737  000006  000004  1$:       MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
1295  003034  022626                            CMP     (SP)+,(SP)+             ;CLEAN UP THE STACK
1296  003036  013746  000030                    MOV     @#EMTVEC,-(SP)          ;SETUP FOR THIS ERROR CALL
1297  003042  012737  011516  000030            MOV     #ERROR1,@#EMTVEC                ;SKIP OVER THE SAVE OF TACS AND TADB
1298  003050  010537  001122                    MOV     TADB,@#$BDADR           ;GET THE FAILING ADDRESS
1299  003054  104010                            ERROR   10                      ;ERROR -- TIME OUT OCCURRED
1300                                                                            ;WHEN ADDRESSING THE TADB REGISTER
1301  003056  012637  000030                    MOV     (SP)+,@#EMTVEC          ;RESTORE THE ERROR CALLS VECTOR
1302  003062  000137  011124                    JMP     @#$EOP                  ;GO TO END OF PROGRAM
1303  003066  012737  000006  000004  2$:       MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
1304
1305                                    ;;*****************************************************************
1306                                    ;TA11 REGISTER ADDRESS TEST
1307                                    ;INSURE THAT TACSH RESPONDS TO ADDRESSING
1308                                    ;;*****************************************************************
1309                                    ;*TEST 5        TEST FOR HIGH BYTE OF TACS
1310                                    ;;*****************************************************************
1311  003074  000004                    TST5:   SCOPE
1312  003076  012767  000001  176062            MOV     #1,$TIMES       ;;DO 1 ITERATION
1313  003104  012706  001100                    MOV     #STACK,SP               ;SETUP THE STACK POINTER
```

```
1314  003110  012737  003124  000004          MOV     #1$,@#ERRVEC            ;SETUP FOR BUS TIMEOUT
1315  003116  105077  176066                  CLRB    @TACSH                  ;TACSH ARE YOU THERE?
1316  003122  000421                          BR      2$                      ;YES -- NO TRAP
1317  003124  012737  000006  000004  1$:     MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
1318  003132  022626                          CMP     (SP)+,(SP)+             ;CLEAN UP THE STACK
1319  003134  013746  000030                  MOV     @#EMTVEC,-(SP)          ;SETUP FOR THIS ERROR CALL
1320  003140  012737  011516  000030          MOV     #ERROR1,@#EMTVEC                ;SKIP OVER THE SAVE OF TACS AND TADB
1321  003146  016737  176036  001122          MOV     TACSH,@#$BDADR          ;GET THE FAILING ADDRESS
1322  003154  104010                          ERROR   10                      ;ERROR -- TIME OUT OCCURRED
1323                                                                          ;WHEN ADDRESSING THE TACSH REGISTER
1324  003156  012637  000030                  MOV     (SP)+,@#EMTVEC          ;RESTORE THE ERROR CALLS VECTOR
1325  003162  000137  011124                  JMP     @#$EOP                  ;GO TO END OF PROGRAM
1326  003166  012737  000006  000004  2$:     MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
1327
1328                                  ;;**************************************************************
1329                                  ;TA11 REGISTER ADDRESS TEST
1330                                  ;INSURE THAT TADBH RESPONDS TO ADDRESSING
1331                                  ;;**************************************************************
1332                                  ;*TEST 6         TEST FOR HIGH BYTE OF TADB
1333                                  ;;**************************************************************
1334  003174  000004                  TST6:   SCOPE
1335  003176  012767  000001  175762          MOV     #1,$TIMES       ;;DO 1 ITERATION
1336  003204  012706  001100                  MOV     #STACK,SP               ;SETUP THE STACK POINTER
1337  003210  012737  003224  000004          MOV     #1$,@#ERRVEC            ;SETUP FOR BUS TIMEOUT
1338  003216  105077  175772                  CLRB    @TADBH                  ;TADBH ARE YOU THERE?
1339  003222  000421                          BR      2$                      ;YES -- NO TRAP
1340  003224  012737  000006  000004  1$:     MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
1341  003232  022626                          CMP     (SP)+,(SP)+             ;CLEAN UP THE STACK
1342  003234  013746  000030                  MOV     @#EMTVEC,-(SP)          ;SETUP FOR THIS ERROR CALL
1343  003240  012737  011516  000030          MOV     #ERROR1,@#EMTVEC                ;SKIP OVER THE SAVE OF TACS AND TADB
1344  003246  016737  175742  001122          MOV     TADBH,@#$BDADR          ;GET THE FAILING ADDRESS
1345  003254  104010                          ERROR   10                      ;ERROR -- TIME OUT OCCURRED
1346                                                                          ;WHEN ADDRESSING THE TADBH REGISTER
1347  003256  012637  000030                  MOV     (SP)+,@#EMTVEC          ;RESTORE THE ERROR CALLS VECTOR
1348  003262  000137  011124                  JMP     @#$EOP                  ;GO TO END OF PROGRAM
1349  003266  012737  000006  000004  2$:     MOV     #ERRVEC+2,@#ERRVEC      ;RESTORE TRAP CATCHER
1350
```

```
                                        ;////////////////////////////////////////////////////////////////
                                        ;////////////////////////////////////////////////////////////////
                                        ;THE FOLLOWING TESTS WILL CHECK THE INITIAL STATE OF ALL BITS
                                        ;IN THE TACS THAT ARE NOT DRIVE DEPENDENT.
                                        ;////////////////////////////////////////////////////////////////
                                        ;;**************************************************************
                                        ;*TEST 7         TEST INITIAL CONDITION OF TACS BIT14 = 0
                                        ;;**************************************************************
003274  000004                  TST7:   SCOPE
003276  012767  003306  175602          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
003304  000005                          RESET
003306  032714  040000          1$:     BIT     #BIT14,@TACS            ;IS BIT14 OF TACS = 0?
003312  001401                          BEQ     TST10           ;;BR IF YES
003314  104001                          ERROR   1                       ;ERROR -- BIT14 OF TACS DIDN'T INITIA_IZE PROPER
                                        ;;**************************************************************
                                        ;*TEST 10        TEST INITIAL CONDITION OF TACS BIT11 = 0
                                        ;;**************************************************************
003316  000004                  TST10:  SCOPE
003320  012767  003330  175560          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
003326  000005                          RESET
003330  032714  004000          1$:     BIT     #BIT11,@TACS            ;IS BIT11 OF TACS = 0?
003334  001401                          BEQ     TST11           ;;BR IF YES
003336  104001                          ERROR   1                       ;ERROR -- BIT11 OF TACS DIDN'T INITIALIZE PROPER
                                        ;;**************************************************************
                                        ;*TEST 11        TEST INITIAL CONDITION OF TACS BIT10 = 0
                                        ;;**************************************************************
003340  000004                  TST11:  SCOPE
003342  012767  003352  175536          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
003350  000005                          RESET
003352  032714  002000          1$:     BIT     #BIT10,@TACS            ;IS BIT10 OF TACS = 0?
003356  001401                          BEQ     TST12           ;;BR IF YES
003360  104001                          ERROR   1                       ;ERROR -- BIT10 OF TACS DIDN'T INITIALIZE PROPER
                                        ;;**************************************************************
                                        ;*TEST 12        TEST INITIAL CONDITION OF TACS BIT08 = 0
                                        ;;**************************************************************
003362  000004                  TST12:  SCOPE
003364  012767  003374  175514          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
003372  000005                          RESET
003374  032714  000400          1$:     BIT     #BIT08,@TACS            ;IS BIT08 OF TACS = 0?
003400  001401                          BEQ     TST13           ;;BR IF YES
003402  104001                          ERROR   1                       ;ERROR -- BIT08 OF TACS DIDN'T INITIALIZE PROPER
                                        ;;**************************************************************
                                        ;*TEST 13        TEST INITIAL CONDITION OF TACS BIT07 = 0
                                        ;;**************************************************************
003404  000004                  TST13:  SCOPE
003406  012767  003416  175472          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
003414  000005                          RESET
003416  032714  000200          1$:     BIT     #BIT07,@TACS            ;IS BIT07 OF TACS = 0?
003422  001401                          BEQ     TST14           ;;BR IF YES
003424  104001                          ERROR   1                       ;ERROR -- BIT07 OF TACS DIDN'T INITIALIZE PROPER
                                        ;;**************************************************************
                                        ;*TEST 14        TEST INITIAL CONDITION OF TACS BIT06 = 0
                                        ;;**************************************************************
003426  000004                  TST14:  SCOPE
003430  012767  003440  175450          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
003436  000005                          RESET
```

```
1407  003440  032714  000100          1$:     BIT     #BIT06,@TACS            ;IS BIT06 OF TACS = 0?
1408  003444  001401                          BEQ     TST15           ;;BR IF YES
1409  003446  104001                          ERROR   1                       ;ERROR -- BIT06 OF TACS DIDN'T INITIALIZE PROPER
1410                                  ;;**************************************************************
1411                                  ;*TEST 15       TEST INITIAL CONDITION OF TACS BIT04 = 0
1412                                  ;;**************************************************************
1413  003450  000004                  TST15:  SCOPE
1414  003452  012767  003462  175426          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1415  003460  000005                          RESET
1416  003462  032714  000020          1$:     BIT     #BIT04,@TACS            ;IS BIT04 OF TACS = 0?
1417  003466  001401                          BEQ     TST16           ;;BR IF YES
1418  003470  104001                          ERROR   1                       ;ERROR -- BIT04 OF TACS DIDN'T INITIALIZE PROPER
1419                                  ;;**************************************************************
1420                                  ;*TEST 16       TEST INITIAL CONDITION OF TACS BIT03 = 0
1421                                  ;;**************************************************************
1422  003472  000004                  TST16:  SCOPE
1423  003474  012767  003504  175404          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1424  003502  000005                          RESET
1425  003504  032714  000010          1$:     BIT     #BIT03,@TACS            ;IS BIT03 OF TACS = 0?
1426  003510  001401                          BEQ     TST17           ;;BR IF YES
1427  003512  104001                          ERROR   1                       ;ERROR -- BIT03 OF TACS DIDN'T INITIALIZE PROPER
1428                                  ;;**************************************************************
1429                                  ;*TEST 17       TEST INITIAL CONDITION OF TACS BIT02 = 0
1430                                  ;;**************************************************************
1431  003514  000004                  TST17:  SCOPE
1432  003516  012767  003526  175362          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1433  003524  000005                          RESET
1434  003526  032714  000004          1$:     BIT     #BIT02,@TACS            ;IS BIT02 OF TACS = 0?
1435  003532  001401                          BEQ     TST20           ;;BR IF YES
1436  003534  104001                          ERROR   1                       ;ERROR -- BIT02 OF TACS DIDN'T INITIALIZE PROPER
1437                                  ;;**************************************************************
1438                                  ;*TEST 20       TEST INITIAL CONDITION OF TACS BIT01 = 0
1439                                  ;;**************************************************************
1440  003536  000004                  TST20:  SCOPE
1441  003540  012767  003550  175340          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1442  003546  000005                          RESET
1443  003550  032714  000002          1$:     BIT     #BIT01,@TACS            ;IS BIT01 OF TACS = 0?
1444  003554  001401                          BEQ     TST21           ;;BR IF YES
1445  003556  104001                          ERROR   1                       ;ERROR -- BIT01 OF TACS DIDN'T INITIALIZE PROPER
1446                                  ;;**************************************************************
1447                                  ;*TEST 21       TEST INITIAL CONDITION OF TACS BIT00 = 0
1448                                  ;;**************************************************************
1449  003560  000004                  TST21:  SCOPE
1450  003562  012767  003572  175316          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1451  003570  000005                          RESET
1452  003572  032714  000001          1$:     BIT     #BIT00,@TACS            ;IS BIT00 OF TACS = 0?
1453  003576  001401                          BEQ     TST22           ;;BR IF YES
1454  003600  104001                          ERROR   1                       ;ERROR -- BIT00 OF TACS DIDN'T INITIALIZE PROPER
1455
```

```
1456                                    ;////////////////////////////////////////////////////////////////
1457                                    ;////////////////////////////////////////////////////////////////
1458                                    ;THE FOLLOWING TESTS VALIDATES EACH READ/WRITE
1459                                    ;BIT OF THE TACS FOR SETTING, CLEARING,
1460                                    ;AND INITIALIZING
1461                                    ;////////////////////////////////////////////////////////////////
1462                                    ;;**************************************************************
1463                                    ;*TEST 22       TEST BIT08 OF TACS MAY BE "SET" AND "CLEARED"
1464                                    ;;**************************************************************
1465  003602  000004                    TST22:  SCOPE
1466  003604  052714  000400                   BIS     #BIT08,@TACS            ;SET BIT08 OF TACS
1467  003610  032714  000400                   BIT     #BIT08,@TACS            ;DID BIT08 SET?
1468  003614  001001                           BNE     1$                      ;BR IF YES
1469  003616  104001                           ERROR   1                       ;BIT08 FAILED TO SET
1470
1471  003620  042714  000400           1$:     BIC     #BIT08,@TACS            ;NOW CLEAR IT
1472  003624  032714  000400                   BIT     #BIT08,@TACS            ;DID BIT08 CLEAR?
1473  003630  001401                           BEQ     TST23           ;;BR IF YES
1474  003632  104001                           ERROR   1                       ;ERROR -- BIT08 OF TACS FAILED TO CLEAR
1475                                    ;;**************************************************************
1476                                    ;*TEST 23       TEST BIT08 OF TACS INITIALIZE TO ZERO
1477                                    ;;**************************************************************
1478  003634  000004                    TST23:  SCOPE
1479  003636  012767  000005  175322           MOV     #5,$TIMES       ;;DO 5 ITERATIONS
1480  003644  012714  000400           1$:     MOV     #BIT08,@TACS            ;SET BIT08 OF TACS
1481  003650  032714  000400                   BIT     #BIT08,@TACS            ;DID BIT08 SET?
1482  003654  001001                           BNE     2$                      ;BR IF YES
1483  003656  104001                           ERROR   1                       ;BIT08 FAILED TO SET
1484
1485  003660  000005                    2$:     RESET                           ;CLEAR THE WORLD
1486  003662  032714  000400                   BIT     #BIT08,@TACS            ;DID BIT08 CLEAR?
1487  003666  001401                           BEQ     TST24           ;;BR IF YES
1488  003670  104001                           ERROR   1                       ;ERROR -- RESET DIDN'T CLEAR BIT08
1489                                    ;;**************************************************************
1490                                    ;*TEST 24       TEST BIT06 OF TACS MAY BE "SET" AND "CLEARED"
1491                                    ;;**************************************************************
1492  003672  000004                    TST24:  SCOPE
1493  003674  052714  000100                   BIS     #BIT06,@TACS            ;SET BIT06 OF TACS
1494  003700  032714  000100                   BIT     #BIT06,@TACS            ;DID BIT06 SET?
1495  003704  001001                           BNE     1$                      ;BR IF YES
1496  003706  104001                           ERROR   1                       ;BIT06 FAILED TO SET
1497
1498  003710  042714  000100           1$:     BIC     #BIT06,@TACS            ;NOW CLEAR IT
1499  003714  032714  000100                   BIT     #BIT06,@TACS            ;DID BIT06 CLEAR?
1500  003720  001401                           BEQ     TST25           ;;BR IF YES
1501  003722  104001                           ERROR   1                       ;ERROR -- BIT06 OF TACS FAILED TO CLEAR
1502                                    ;;**************************************************************
1503                                    ;*TEST 25       TEST BIT06 OF TACS INITIALIZE TO ZERO
1504                                    ;;**************************************************************
1505  003724  000004                    TST25:  SCOPE
1506  003726  012767  000005  175232           MOV     #5,$TIMES       ;;DO 5 ITERATIONS
1507  003734  012714  000100           1$:     MOV     #BIT06,@TACS            ;SET BIT06 OF TACS
1508  003740  032714  000100                   BIT     #BIT06,@TACS            ;DID BIT06 SET?
1509  003744  001001                           BNE     2$                      ;BR IF YES
1510  003746  104001                           ERROR   1                       ;BIT06 FAILED TO SET
1511
```

```
1512  003750  000005                  2$:     RESET                           ;CLEAR THE WORLD
1513  003752  032714  000100                  BIT     #BIT06,@TACS            ;DID BIT06 CLEAR?
1514  003756  001401                          BEQ     TST26           ;;BR IF YES
1515  003760  104001                          ERROR   1                       ;ERROR -- RESET DIDN'T CLEAR BIT06
1516                                  ;;**************************************************************
1517                                  ;*TEST 26        TEST BIT04 OF TACS MAY BE "SET" AND "CLEARED"
1518                                  ;;**************************************************************
1519  003762  000004                  TST26:  SCOPE
1520  003764  052714  000020                  BIS     #BIT04,@TACS            ;SET BIT04 OF TACS
1521  003770  032714  000020                  BIT     #BIT04,@TACS            ;DID BIT04 SET?
1522  003774  001001                          BNE     1$                      ;BR IF YES
1523  003776  104001                          ERROR   1                       ;BIT04 FAILED TO SET
1524
1525  004000  042714  000020          1$:     BIC     #BIT04,@TACS            ;NOW CLEAR IT
1526  004004  032714  000020                  BIT     #BIT04,@TACS            ;DID BIT04 CLEAR?
1527  004010  001401                          BEQ     TST27           ;;BR IF YES
1528  004012  104001                          ERROR   1                       ;ERROR -- BIT04 OF TACS FAILED TO CLEAR
1529                                  ;;**************************************************************
1530                                  ;*TEST 27        TEST BIT04 OF TACS INITIALIZE TO ZERO
1531                                  ;;**************************************************************
1532  004014  000004                  TST27:  SCOPE
1533  004016  012767  000005  175142          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
1534  004024  012714  000020          1$:     MOV     #BIT04,@TACS            ;SET BIT04 OF TACS
1535  004030  032714  000020                  BIT     #BIT04,@TACS            ;DID BIT04 SET?
1536  004034  001001                          BNE     2$                      ;BR IF YES
1537  004036  104001                          ERROR   1                       ;BIT04 FAILED TO SET
1538
1539  004040  000005                  2$:     RESET                           ;CLEAR THE WORLD
1540  004042  032714  000020                  BIT     #BIT04,@TACS            ;DID BIT04 CLEAR?
1541  004046  001401                          BEQ     TST30           ;;BR IF YES
1542  004050  104001                          ERROR   1                       ;ERROR -- RESET DIDN'T CLEAR BIT04
1543                                  ;;**************************************************************
1544                                  ;*TEST 30        TEST BIT03 OF TACS MAY BE "SET" AND "CLEARED"
1545                                  ;;**************************************************************
1546  004052  000004                  TST30:  SCOPE
1547  004054  052714  000010                  BIS     #BIT03,@TACS            ;SET BIT03 OF TACS
1548  004060  032714  000010                  BIT     #BIT03,@TACS            ;DID BIT03 SET?
1549  004064  001001                          BNE     1$                      ;BR IF YES
1550  004066  104001                          ERROR   1                       ;BIT03 FAILED TO SET
1551
1552  004070  042714  000010          1$:     BIC     #BIT03,@TACS            ;NOW CLEAR IT
1553  004074  032714  000010                  BIT     #BIT03,@TACS            ;DID BIT03 CLEAR?
1554  004100  001401                          BEQ     TST31           ;;BR IF YES
1555  004102  104001                          ERROR   1                       ;ERROR -- BIT03 OF TACS FAILED TO CLEAR
1556                                  ;;**************************************************************
1557                                  ;*TEST 31        TEST BIT03 OF TACS INITIALIZE TO ZERO
1558                                  ;;**************************************************************
1559  004104  000004                  TST31:  SCOPE
1560  004106  012767  000005  175052          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
1561  004114  012714  000010          1$:     MOV     #BIT03,@TACS            ;SET BIT03 OF TACS
1562  004120  032714  000010                  BIT     #BIT03,@TACS            ;DID BIT03 SET?
1563  004124  001001                          BNE     2$                      ;BR IF YES
1564  004126  104001                          ERROR   1                       ;BIT03 FAILED TO SET
1565
1566  004130  000005                  2$:     RESET                           ;CLEAR THE WORLD
1567  004132  032714  000010                  BIT     #BIT03,@TACS            ;DID BIT03 CLEAR?
```

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1568  004136  001401                          BEQ     TST32           ;;BR IF YES
1569  004140  104001                          ERROR   1               ;ERROR -- RESET DIDN'T CLEAR BIT03
1570                                  ;;*****************************************************************
1571                                  ;*TEST 32       TEST BIT02 OF TACS MAY BE "SET" AND "CLEARED"
1572                                  ;;*****************************************************************
1573  004142  000004                  TST32:  SCOPE
1574  004144  052714  000004                  BIS     #BIT02,@TACS            ;SET BIT02 OF TACS
1575  004150  032714  000004                  BIT     #BIT02,@TACS            ;DID BIT02 SET?
1576  004154  001001                          BNE     1$                      ;BR IF YES
1577  004156  104001                          ERROR   1                       ;BIT02 FAILED TO SET
1578
1579  004160  042714  000004          1$:     BIC     #BIT02,@TACS            ;NOW CLEAR IT
1580  004164  032714  000004                  BIT     #BIT02,@TACS            ;DID BIT02 CLEAR?
1581  004170  001401                          BEQ     TST33           ;;BR IF YES
1582  004172  104001                          ERROR   1                       ;ERROR -- BIT02 OF TACS FAILED TO CLEAR
1583                                  ;;*****************************************************************
1584                                  ;*TEST 33       TEST BIT02 OF TACS INITIALIZE TO ZERO
1585                                  ;;*****************************************************************
1586  004174  000004                  TST33:  SCOPE
1587  004176  012767  000005  174762          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
1588  004204  012714  000004          1$:     MOV     #BIT02,@TACS            ;SET BIT02 OF TACS
1589  004210  032714  000004                  BIT     #BIT02,@TACS            ;DID BIT02 SET?
1590  004214  001001                          BNE     2$                      ;BR IF YES
1591  004216  104001                          ERROR   1                       ;BIT02 FAILED TO SET
1592
1593  004220  000005          2$:     RESET                           ;CLEAR THE WORLD
1594  004222  032714  000004                  BIT     #BIT02,@TACS            ;DID BIT02 CLEAR?
1595  004226  001401                          BEQ     TST34           ;;BR IF YES
1596  004230  104001                          ERROR   1                       ;ERROR -- RESET DIDN'T CLEAR BIT02
1597                                  ;;*****************************************************************
1598                                  ;*TEST 34       TEST BIT01 OF TACS MAY BE "SET" AND "CLEARED"
1599                                  ;;*****************************************************************
1600  004232  000004                  TST34:  SCOPE
1601  004234  052714  000002                  BIS     #BIT01,@TACS            ;SET BIT01 OF TACS
1602  004240  032714  000002                  BIT     #BIT01,@TACS            ;DID BIT01 SET?
1603  004244  001001                          BNE     1$                      ;BR IF YES
1604  004246  104001                          ERROR   1                       ;BIT01 FAILED TO SET
1605
1606  004250  042714  000002          1$:     BIC     #BIT01,@TACS            ;NOW CLEAR IT
1607  004254  032714  000002                  BIT     #BIT01,@TACS            ;DID BIT01 CLEAR?
1608  004260  001401                          BEQ     TST35           ;;BR IF YES
1609  004262  104001                          ERROR   1                       ;ERROR -- BIT01 OF TACS FAILED TO C..R
1610                                  ;;*****************************************************************
1611                                  ;*TEST 35       TEST BIT01 OF TACS INITIALIZE TO ZERO
1612                                  ;;*****************************************************************
1613  004264  000004                  TST35:  SCOPE
1614  004266  012767  000005  174672          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
1615  004274  012714  000002          1$:     MOV     #BIT01,@TACS            ;SET BIT01 OF TACS
1616  004300  032714  000002                  BIT     #BIT01,@TACS            ;DID BIT01 SET?
1617  004304  001001                          BNE     2$                      ;BR IF YES
1618  004306  104001                          ERROR   1                       ;BIT01 FAILED TO SET
1619
1620  004310  000005          2$:     RESET                           ;CLEAR THE WORLD
1621  004312  032714  000002                  BIT     #BIT01,@TACS            ;DID BIT01 CLEAR?
1622  004316  001401                          BEQ     TST36           ;;BR IF YES
1623  004320  104001                          ERROR   1                       ;ERROR -- RESET DIDN'T CLEAR BIT01
```

```
1624                                    ;;*************************************************************
1625                                    ;*TEST 36       COUNT PATTERN TO TACS<04:01>
1626                                    ;;*************************************************************
1627  004322  000004                    TST36:  SCOPE
1628  004324  012767  004370  174636            MOV     #TST37,$ESCAPE  ;;ESCAPE TO TEST 37 ON ERROR
1629  004332  005014                            CLR     @TACS                   ;SETUP TACS FOR COUNTING
1630  004334  005000                            CLR     R0                      ;SETUP R0 FOR COUNTING
1631  004336  012702  000002                    MOV     #2,R2                   ;SET THE INCREMENT
1632  004342  011401                    1$:     MOV     @TACS,R1                ;GET TACS
1633  004344  042701  177741                    BIC     #^C36,R1                ;CLEAR THE JUNK
1634  004350  020100                            CMP     R1,R0                   ;COUNT OK?
1635  004352  001401                            BEQ     2$                      ;BR IF YES
1636  004354  104005                            ERROR   5                       ;ERROR--BAD COUNT
1637  004356  060200                    2$:     ADD     R2,R0                   ;UPDATE R0
1638  004360  060214                            ADD     R2,@TACS                ;COUNT TACS
1639  004362  032700  000036                    BIT     #36,R0                  ;READY?
1640  004366  001365                            BNE     1$                      ;NO--GO DO TEST COUNT PATTERN
1641
```

```
                                        ;////////////////////////////////////////////////////////////////
                                        ;////////////////////////////////////////////////////////////////
                                        ;THE FOLLOWING TESTS WILL CHECK THE INITIAL STATE OF ALL BITS
                                        ;IN THE TACS THAT ARE DRIVE AND FUNCTION DEPENDENT.
                                        ;NOTE: FOR ALL OF THESE TEST TO PASS
                                        ;THE DRIVE UNDERGOING TEST MUST BE
                                        ;ON CLEAR LEADER AND WRITE ENABLED.
                                        ;////////////////////////////////////////////////////////////////
                                        ;;**************************************************************
                                        ;*TEST 37       TEST INITIAL CONDITION OF TACS BIT05 = 1
                                        ;;**************************************************************
004370  000004                  TST37:  SCOPE
004372  012767  004404  174506          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
004400  000005                          RESET
004402  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
004404  032714  000040          1$:     BIT     #BIT05,@TACS            ;IS BIT05 OF TACS = 1?
004410  001001                          BNE     TST40           ;;BR IF YES
004412  104001                          ERROR   1                       ;ERROR -- BIT05 OF TACS DIDN'T INITIALIZE PROPER
                                        ;;**************************************************************
                                        ;*TEST 40       TEST INITIAL CONDITION OF TACS BIT09 = 0
                                        ;;**************************************************************
004414  000004                  TST40:  SCOPE
004416  012767  004430  174462          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
004424  000005                          RESET
004426  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
004430  032714  001000          1$:     BIT     #BIT09,@TACS            ;IS BIT09 OF TACS = 0?
004434  001401                          BEQ     TST41           ;;BR IF YES
004436  104001                          ERROR   1                       ;ERROR -- BIT09 OF TACS DIDN'T INITIALIZE PROPER
                                        ;;**************************************************************
                                        ;*TEST 41       TEST INITIAL CONDITION OF TACS BIT12 = 0
                                        ;;**************************************************************
004440  000004                  TST41:  SCOPE
004442  012767  004460  174436          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
004450  000005                          RESET
004452  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
004454  052714  000002                  BIS     #WRITE,@TACS            ;LOAD WRITE FUNCTION
004460  032714  010000          1$:     BIT     #BIT12,@TACS            ;IS BIT12 OF TACS = 0?
004464  001401                          BEQ     TST42           ;;BR IF YES
004466  104001                          ERROR   1                       ;ERROR -- BIT12 OF TACS DIDN'T INITIALIZE PROPER
                                        ;;**************************************************************
                                        ;*TEST 42       TEST INITIAL CONDITION OF TACS BIT13 = 1
                                        ;;**************************************************************
004470  000004                  TST42:  SCOPE
004472  012767  004504  174406          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
004500  000005                          RESET
004502  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
004504  032714  020000          1$:     BIT     #BIT13,@TACS            ;IS BIT13 OF TACS = 1?
004510  001001                          BNE     TST43           ;;BR IF YES
004512  104001                          ERROR   !                       ;ERROR -- BIT13 OF TACS DIDN'T INITIALIZE PROPER
                                        ;;**************************************************************
                                        ;*TEST 43       TEST INITIAL CONDITION OF TACS BIT15 = 1
                                        ;;**************************************************************
004514  000004                  TST43:  SCOPE
004516  012767  004530  174362          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
004524  000005                          RESET
004526  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
```

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1698  004530  032714  100000          1$:     BIT     #BIT15,@TACS            ;IS BIT15 OF TACS = 1?
1699  004534  001001                          BNE     TST44           ;;BR IF YES
1700  004536  104001                          ERROR   1                       ;ERROR -- BIT15 OF TACS DIDN'T INITIALIZE PROPER
```

```
1701                                    ;////////////////////////////////////////////////////////////////
1702                                    ;////////////////////////////////////////////////////////////////
1703                                    ;THE FOLLOWING TESTS CHECKS EACH READ ONLY
1704                                    ;BIT OF THE TACS FOR READ ONLY CAPABILITY
1705                                    ;////////////////////////////////////////////////////////////////
1706                                    ;;**************************************************************
1707                                            ;THIS TEST WILL TRY TO CHANGE THE STATE OF BIT15.
1708                                            ;THEN CHECK IT TO SEE IF IT CHANGED.
1709                                    ;;**************************************************************
1710                                    ;*TEST 44        TEST TACS BIT15 IS READ ONLY
1711                                    ;;**************************************************************
1712  004540  000004                    TST44:  SCOPE
1713  004542  012767  004552  174336            MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1714  004550  000005                            RESET                           ;INITIALIZE ALL BITS
1715  004552  011400                    1$:     MOV     @TACS,R0                ;GET TACS FOR COMPARING
1716  004554  010001                            MOV     R0,R1                   ;PUT STATUS IN R1
1717  004556  005101                            COM     R1                      ;COMPLEMENT R1
1718  004560  042700  077777                    BIC     #^C<BIT15>,R0           ;GET RID OF UNDESIRED BITS
1719  004564  042701  077777                    BIC     #^C<BIT15>,R1
1720  004570  010114                            MOV     R1,@TACS                ;TRY TO CHANGE BIT15
1721  004572  011401                            MOV     @TACS,R1                ;READ IT BACK
1722  004574  042701  077777                    BIC     #^C<BIT15>,R1           ;ONLY LOOK AT BIT15
1723  004600  020001                            CMP     R0,R1                   ;DID IT CHANGE?
1724  004602  001401                            BEQ     TST45           ;;BR IF NO
1725  004604  104001                            ERROR   1                       ;ERROR -- BIT15 CHANGED
1726                                    ;;**************************************************************
1727                                            ;THIS TEST WILL TRY TO CHANGE THE STATE OF BIT14.
1728                                            ;THEN CHECK IT TO SEE IF IT CHANGED.
1729                                    ;;**************************************************************
1730                                    ;*TEST 45        TEST TACS BIT14 IS READ ONLY
1731                                    ;;**************************************************************
1732  004606  000004                    TST45:  SCOPE
1733  004610  012767  004620  174270            MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1734  004616  000005                            RESET                           ;INITIALIZE ALL BITS
1735  004620  011400                    1$:     MOV     @TACS,R0                ;GET TACS FOR COMPARING
1736  004622  010001                            MOV     R0,R1                   ;PUT STATUS IN R1
1737  004624  005101                            COM     R1                      ;COMPLEMENT R1
1738  004626  042700  137777                    BIC     #^C<BIT14>,R0           ;GET RID OF UNDESIRED BITS
1739  004632  042701  137777                    BIC     #^C<BIT14>,R1
1740  004636  010114                            MOV     R1,@TACS                ;TRY TO CHANGE BIT14
1741  004640  011401                            MOV     @TACS,R1                ;READ IT BACK
1742  004642  042701  137777                    BIC     #^C<BIT14>,R1           ;ONLY LOOK AT BIT14
1743  004646  020001                            CMP     R0,R1                   ;DID IT CHANGE?
1744  004650  001401                            BEQ     TST46           ;;BR IF NO
1745  004652  104001                            ERROR   1                       ;ERROR -- BIT14 CHANGED
1746                                    ;;**************************************************************
1747                                            ;THIS TEST WILL TRY TO CHANGE THE STATE OF BIT13.
1748                                            ;THEN CHECK IT TO SEE IF IT CHANGED.
1749                                    ;;**************************************************************
1750                                    ;*TEST 46        TEST TACS BIT13 IS READ ONLY
1751                                    ;;**************************************************************
1752  004654  000004                    TST46:  SCOPE
1753  004656  012767  004666  174222            MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1754  004664  000005                            RESET                           ;INITIALIZE ALL BITS
1755  004666  011400                    1$:     MOV     @TACS,R0                ;GET TACS FOR COMPARING
1756  004670  010001                            MOV     R0,R1                   ;PUT STATUS IN R1
```

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1757  004672  005101                          COM     R1                      ;COMPLEMENT R1
1758  004674  042700  157777                  BIC     #^C<BIT13>,R0           ;GET RID OF UNDESIRED BITS
1759  004700  042701  157777                  BIC     #^C<BIT13>,R1
1760  004704  010114                          MOV     R1,@TACS                ;TRY TO CHANGE BIT13
1761  004706  011401                          MOV     @TACS,R1                ;READ IT BACK
1762  004710  042701  157777                  BIC     #^C<BIT13>,R1           ;ONLY LOOK AT BIT13
1763  004714  020001                          CMP     R0,R1                   ;DID IT CHANGE?
1764  004716  001401                          BEQ     TST47           ;;BR IF NO
1765  004720  104001                          ERROR   1                       ;ERROR -- BIT13 CHANGED
1766                                  ;;**************************************************************
1767                                  ;THIS TEST WILL TRY TO CHANGE THE STATE OF BIT12.
1768                                  ;THEN CHECK IT TO SEE IF IT CHANGED.
1769                                  ;;**************************************************************
1770                                  ;*TEST 47        TEST TACS BIT12 IS READ ONLY
1771                                  ;;**************************************************************
1772  004722  000004                  TST47:  SCOPE
1773  004724  012767  004734  174154          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1774  004732  000005                          RESET                           ;INITIALIZE ALL BITS
1775  004734  011400                  1$:     MOV     @TACS,R0                ;GET TACS FOR COMPARING
1776  004736  010001                          MOV     R0,R1                   ;PUT STATUS IN R1
1777  004740  005101                          COM     R1                      ;COMPLEMENT R1
1778  004742  042700  167777                  BIC     #^C<BIT12>,R0           ;GET RID OF UNDESIRED BITS
1779  004746  042701  167777                  BIC     #^C<BIT12>,R1
1780  004752  010114                          MOV     R1,@TACS                ;TRY TO CHANGE BIT12
1781  004754  011401                          MOV     @TACS,R1                ;READ IT BACK
1782  004756  042701  167777                  BIC     #^C<BIT12>,R1           ;ONLY LOOK AT BIT12
1783  004762  020001                          CMP     R0,R1                   ;DID IT CHANGE?
1784  004764  001401                          BEQ     TST50           ;;BR IF NO
1785  004766  104001                          ERROR   1                       ;ERROR -- BIT12 CHANGED
1786                                  ;;**************************************************************
1787                                  ;THIS TEST WILL TRY TO CHANGE THE STATE OF BIT11.
1788                                  ;THEN CHECK IT TO SEE IF IT CHANGED.
1789                                  ;;**************************************************************
1790                                  ;*TEST 50        TEST TACS BIT11 IS READ ONLY
1791                                  ;;**************************************************************
1792  004770  000004                  TST50:  SCOPE
1793  004772  012767  005002  174106          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1794  005000  000005                          RESET                           ;INITIALIZE ALL BITS
1795  005002  011400                  1$:     MOV     @TACS,R0                ;GET TACS FOR COMPARING
1796  005004  010001                          MOV     R0,R1                   ;PUT STATUS IN R1
1797  005006  005101                          COM     R1                      ;COMPLEMENT R1
1798  005010  042700  173777                  BIC     #^C<BIT11>,R0           ;GET RID OF UNDESIRED BITS
1799  005014  042701  173777                  BIC     #^C<BIT11>,R1
1800  005020  010114                          MOV     R1,@TACS                ;TRY TO CHANGE BIT11
1801  005022  011401                          MOV     @TACS,R1                ;READ IT BACK
1802  005024  042701  173777                  BIC     #^C<BIT11>,R1           ;ONLY LOOK AT BIT11
1803  005030  020001                          CMP     R0,R1                   ;DID IT CHANGE?
1804  005032  001401                          BEQ     TST51           ;;BR IF NO
1805  005034  104001                          ERROR   1                       ;ERROR -- BIT11 CHANGED
1806                                  ;;**************************************************************
1807                                  ;THIS TEST WILL TRY TO CHANGE THE STATE OF BIT10.
1808                                  ;THEN CHECK IT TO SEE IF IT CHANGED.
1809                                  ;;**************************************************************
1810                                  ;*TEST 51        TEST TACS BIT10 IS READ ONLY
1811                                  ;;**************************************************************
1812  005036  000004                  TST51:  SCOPE
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1813  005040  012767  005050  174040          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1814  005046  000005                          RESET                   ;INITIALIZE ALL BITS
1815  005050  011400                  1$:     MOV     @TACS,R0        ;GET TACS FOR COMPARING
1816  005052  010001                          MOV     R0,R1           ;PUT STATUS IN R1
1817  005054  005101                          COM     R1              ;COMPLEMENT R1
1818  005056  042700  175777                 BIC     #^C<BIT10>,R0   ;GET RID OF UNDESIRED BITS
1819  005062  042701  175777                 BIC     #^C<BIT10>,R1
1820  005066  010114                          MOV     R1,@TACS        ;TRY TO CHANGE BIT10
1821  005070  011401                          MOV     @TACS,R1        ;READ IT BACK
1822  005072  042701  175777                 BIC     #^C<BIT10>,R1   ;ONLY LOOK AT BIT10
1823  005076  020001                          CMP     R0,R1           ;DID IT CHANGE?
1824  005100  001401                          BEQ     TST52           ;;BR IF NO
1825  005102  104001                          ERROR   1               ;ERROR -- BIT10 CHANGED
1826                          ;;**************************************************************
1827                          ;THIS TEST WILL TRY TO CHANGE THE STATE OF BIT09.
1828                          ;THEN CHECK IT TO SEE IF IT CHANGED.
1829                          ;;**************************************************************
1830                          ;*TEST 52        TEST TACS BIT09 IS READ ONLY
1831                          ;;**************************************************************
1832  005104  000004          TST52:  SCOPE
1833  005106  012767  005116  173772          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1834  005114  000005                          RESET                   ;INITIALIZE ALL BITS
1835  005116  011400                  1$:     MOV     @TACS,R0        ;GET TACS FOR COMPARING
1836  005120  010001                          MOV     R0,R1           ;PUT STATUS IN R1
1837  005122  005101                          COM     R1              ;COMPLEMENT R1
1838  005124  042700  176777                 BIC     #^C<BIT09>,R0   ;GET RID OF UNDESIRED BITS
1839  005130  042701  176777                 BIC     #^C<BIT09>,R1
1840  005134  010114                          MOV     R1,@TACS        ;TRY TO CHANGE BIT09
1841  005136  011401                          MOV     @TACS,R1        ;READ IT BACK
1842  005140  042701  176777                 BIC     #^C<BIT09>,R1   ;ONLY LOOK AT BIT09
1843  005144  020001                          CMP     R0,R1           ;DID IT CHANGE?
1844  005146  001401                          BEQ     TST53           ;;BR IF NO
1845  005150  104001                          ERROR   1               ;ERROR -- BIT09 CHANGED
1846                          ;;**************************************************************
1847                          ;THIS TEST WILL TRY TO CHANGE THE STATE OF BIT07.
1848                          ;THEN CHECK IT TO SEE IF IT CHANGED.
1849                          ;;**************************************************************
1850                          ;*TEST 53        TEST TACS BIT07 IS READ ONLY
1851                          ;;**************************************************************
1852  005152  000004          TST53:  SCOPE
1853  005154  012767  005164  173724          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1854  005162  000005                          RESET                   ;INITIALIZE ALL BITS
1855  005164  011400                  1$:     MOV     @TACS,R0        ;GET TACS FOR COMPARING
1856  005166  010001                          MOV     R0,R1           ;PUT STATUS IN R1
1857  005170  005101                          COM     R1              ;COMPLEMENT R1
1858  005172  042700  177577                 BIC     #^C<BIT07>,R0   ;GET RID OF UNDESIRED BITS
1859  005176  042701  177577                 BIC     #^C<BIT07>,R1
1860  005202  010114                          MOV     R1,@TACS        ;TRY TO CHANGE BIT07
1861  005204  011401                          MOV     @TACS,R1        ;READ IT BACK
1862  005206  042701  177577                 BIC     #^C<BIT07>,R1   ;ONLY LOOK AT BIT07
1863  005212  020001                          CMP     R0,R1           ;DID IT CHANGE?
1864  005214  001401                          BEQ     TST54           ;;BR IF NO
1865  005216  104001                          ERROR   1               ;ERROR -- BIT07 CHANGED
1866                          ;;**************************************************************
1867                          ;THIS TEST WILL TRY TO CHANGE THE STATE OF BIT05.
1868                          ;THEN CHECK IT TO SEE IF IT CHANGED.
```

```
1869                                    ;;**********************************************************************
1870                                    ;*TEST 54        TEST TACS BITO5 IS READ ONLY
1871                                    ;;**********************************************************************
1872  005220  000004                    TST54:  SCOPE
1873  005222  012767  005232  173656            MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
1874  005230  000005                            RESET                           ;INITIALIZE ALL BITS
1875  005232  011400                    1$:     MOV     @TACS,R0                ;GET TACS FOR COMPARING
1876  005234  010001                            MOV     R0,R1                   ;PUT STATUS IN R1
1877  005236  005101                            COM     R1                      ;COMPLEMENT R1
1878  005240  042700  177737                    BIC     #^C<BITO5>,R0           ;GET RID OF UNDESIRED BITS
1879  005244  042701  177737                    BIC     #^C<BITO5>,R1
1880  005250  010114                            MOV     R1,@TACS                ;TRY TO CHANGE BITO5
1881  005252  011401                            MOV     @TACS,R1                ;READ IT BACK
1882  005254  042701  177737                    BIC     #^C<BITO5>,R1           ;ONLY LOOK AT BITO5
1883  005260  020001                            CMP     R0,R1                   ;DID IT CHANGE?
1884  005262  001401                            BEQ     TST55           ;;BR IF NO
1885  005264  104001                            ERROR   1                       ;ERROR -- BITO5 CHANGED
1886
```

```
                                        ;////////////////////////////////////////////////////////////////////////
                                        ;////////////////////////////////////////////////////////////////////////
                                        ;THE FOLLOWING TESTS WILL CHECK FOR DUAL AND/OR FAULTY SELECTION
                                        ;OF THE TA11 ADDRESSES
                                        ;////////////////////////////////////////////////////////////////////////
                                        ;;*********************************************************************
                                        ;*TEST 55        TEST HIGH BYTE SELECTION OF TACS
                                        ;;*********************************************************************
005266  000004                  TST55:  SCOPE
005270  012767  005300  173610          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
005276  000005                          RESET
005300  012714  000004          1$:     MOV     #BIT02,@TACS            ;SET TACS BIT02
005304  105077  173700                  CLRB    @TACSH                  ;CLEAR THE HIGH BYTE
005310  132714  000004                  BITB    #BIT02,@TACS            ;IS BIT02 STILL SET?
005314  001001                          BNE     TST56           ;;BR IF YES
005316  104001                          ERROR   1                       ;CLRB TO HIGH BYTE OF TACS CLEARED LOW BYTE
                                        ;;*********************************************************************
                                        ;*TEST 56        TEST LOW BYTE SELECTION OF TACS
                                        ;;*********************************************************************
005320  000004                  TST56:  SCOPE
005322  012767  005332  173556          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
005330  000005                          RESET
005332  012714  000400          1$:     MOV     #BIT08,@TACS            ;SET BIT08 OF TACS
005336  105014                          CLRB    @TACS                   ;CLEAR THE LOW BYTE OF TACS
005340  132777  000001  173642          BITB    #BIT00,@TACSH           ;IS BIT08 OF TACS STILL SET?
005346  001001                          BNE     TST57           ;;BR IF YES
005350  104001                          ERROR   1                       ;CLRB TO LOW BYTE OF TACS CLEARED THE HIGH BYTE
                                        ;;*********************************************************************
                                        ;*TEST 57        TEST "OUT LOW" SIGNAL
                                        ;;*********************************************************************
005352  000004                  TST57:  SCOPE
005354  012767  005412  173606          MOV     #TST60,$ESCAPE  ;;ESCAPE TO TEST 60 ON ERROR
005362  005014                          CLR     @TACS                   ;ZERO THE TA11 STATUS
005364  032714  000536                  BIT     #UNIT!INT.EN!ILBS!FUNCTION,@TACS
005370  001401                          BEQ     1$
005372  104001                          ERROR   1                       ;TACS DIDN'T CLEAR PROPERLY
005374  112777  000136  173606  1$:     MOVB    #INT.EN!ILBS!FUNCTION,@TACSH    ;LOAD HIGH BYTE OF TACS
005402  032714  000136                  BIT     #INT.EN!ILBS!FUNCTION,@TACS     ;CHECK LOW BYTE
005406  001401                          BEQ     TST60           ;;BR IF LOW BYTE IS OK
005410  104001                          ERROR   1                       ;LOW BYTE IMPROPERLY SELECTED
                                        ;;*********************************************************************
                                        ;*TEST 60        TEST "OUT HIGH" SIGNAL
                                        ;;*********************************************************************
005412  000004                  TST60:  SCOPE
005414  012767  005450  173546          MOV     #TST61,$ESCAPE  ;;ESCAPE TO TEST 61 ON ERROR
005422  005014                          CLR     @TACS                   ;ZERO THE TA11 STATUS
005424  032714  000536                  BIT     #UNIT!INT.EN!ILBS!FUNCTION,@TACS
005430  001401                          BEQ     1$
005432  104001                          ERROR   1                       ;TACS DIDN'T CLEAR PROPERLY
005434  112714  000400          1$:     MOVB    #BIT08,@TACS            ;LOAD LOW BYTE OF TACS
005440  032714  000400                  BIT     #BIT08,@TACS            ;DID BIT08 GET SET?
005444  001401                          BEQ     TST61           ;;BR IF NO
005446  104001                          ERROR   1                       ;HIGH BYTE IMPROPERLY SELECTED
                                        ;;*********************************************************************
                                        ;*TEST 61        TEST "SELECT 00" ISN'T STUCK
                                        ;;*********************************************************************
```

```
 1943  005450  000004                    TST61:  SCOPE
 1944  005452  012767  005506  173510            MOV     #TST62,$ESCAPE  ;;ESCAPE TO TEST 62 ON ERROR
 1945  005460  005014                            CLR     @TACS                   ;CLEAR TA11 STATUS
 1946  005462  032714  000536                    BIT     #UNIT!INT.EN!ILBS!FUNCTION,@TACS
 1947  005466  001401                            BEQ     1$
 1948  005470  104001                            ERROR   1                       ;TACS DIDN'T CLEAR PROPERLY
 1949  005472  012715  177776            1$:     MOV     #^C1,@TADB              ;LOAD THE DATA BUFFER
 1950  005476  032714  000536                    BIT     #UNIT!INT.EN!ILBS!FUNCTION,@TACS
 1951  005502  001401                            BEQ     TST62           ;;BR IF TACS DIDN'T CHANGE
 1952  005504  104001                            ERROR   1                       ;TACS CHANGED WHEN LOADING TADB
 1953
 1954
 1955                                    ;;**************************************************************
 1956                                    ;THE FOLLOWING TEST INSURES THAT THE STATE OF THE "ERROR" INDICATOR IS
 1957                                    ;PROPER FOR ALL FUNCTIONS WHEN THE TAPE IS AT "CLEAR LEADER"
 1958                                    ;;**************************************************************
 1959                                    ;*TEST 62        TEST "ERROR" FOR "CLEAR LEADER"
 1960                                    ;;**************************************************************
 1961  005506  000004                    TST62:  SCOPE
 1962  005510  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
 1963  005512  032714  020000                    BIT     #LEADER,@TACS           ;CHECK FOR CLEAR LEADER
 1964  005516  001001                            BNE     1$                      ;BR IF ON CLEAR LEADER
 1965  005520  104001                            ERROR   1                       ;NOT ON CLEAR LEADER
 1966  005522  112714  000000            1$:     MOVB    #WFG,@TACS              ;CHECK "ERROR" WITH "WFG"
 1967  005526  005714                            TST     @TACS                   ;SAMPLE THE "ERROR" BIT
 1968  005530  100401                            BMI     2$                      ;BR IF "ERROR" = 1
 1969  005532  104001                            ERROR   1                       ;"ERROR" NOT = 1
 1970  005534  112714  000002            2$:     MOVB    #WRITE,@TACS            ;CHECK "ERROR" WITH "WRITE"
 1971  005540  005714                            TST     @TACS                   ;SAMPLE THE "ERROR" BIT
 1972  005542  100401                            BMI     3$                      ;BR IF "ERROR" = 1
 1973  005544  104001                            ERROR   1                       ;"ERROR" NOT = 1
 1974  005546  112714  000004            3$:     MOVB    #READ,@TACS             ;CHECK "ERROR" WITH "READ"
 1975  005552  005714                            TST     @TACS                   ;SAMPLE THE "ERROR" BIT
 1976  005554  100401                            BMI     4$                      ;BR IF "ERROR" = 1
 1977  005556  104001                            ERROR   1                       ;"ERROR" NOT = 1
 1978  005560  112714  000006            4$:     MOVB    #BSFG,@TACS             ;CHECK "ERROR" WITH "BSFG"
 1979  005564  005714                            TST     @TACS                   ;SAMPLE THE "ERROR" BIT
 1980  005566  100401                            BMI     5$                      ;BR IF "ERROR" = 1
 1981  005570  104001                            ERROR   1                       ;"ERROR" NOT = 1
 1982  005572  112714  000010            5$:     MOVB    #BSBG,@TACS             ;CHECK "ERROR" WITH "BSBG"
 1983  005576  005714                            TST     @TACS                   ;SAMPLE THE "ERROR" BIT
 1984  005600  100401                            BMI     6$                      ;BR IF "ERROR" = 1
 1985  005602  104001                            ERROR   1                       ;"ERROR" NOT = 1
 1986  005604  112714  000012            6$:     MOVB    #SFFG,@TACS             ;CHECK "ERROR" WITH "SFFG"
 1987  005610  005714                            TST     @TACS                   ;SAMPLE THE "ERROR" BIT
 1988  005612  100401                            BMI     7$                      ;BR IF "ERROR" = 1
 1989  005614  104001                            ERROR   1                       ;"ERROR" NOT = 1
 1990  005616  112714  000014            7$:     MOVB    #SFBG,@TACS             ;CHECK "ERROR" WITH "SFBG"
 1991  005622  005714                            TST     @TACS                   ;SAMPLE THE "ERROR" BIT
 1992  005624  100401                            BMI     8$                      ;BR IF "ERROR" = 1
 1993  005626  104001                            ERROR   1                       ;"ERROR" NOT = 1
 1994  005630  112714  000016            8$:     MOVB    #REWIND,@TACS           ;CHECK "ERROR" WITH "REWIND"
 1995  005634  005714                            TST     @TACS                   ;SAMPLE THE "ERROR" BIT
 1996  005636  100001                            BPL     TST63           ;;BR IF "ERROR" = 0
 1997  005640  104001                            ERROR   1                       ;"ERROR" NOT = 0
```

```
                                        ;////////////////////////////////////////////////////////////////////////
                                        ;////////////////////////////////////////////////////////////////////////
                                        ;THE FOLLOWING TESTS WILL CHECK BASIC OPERATIONS OF THE
                                        ;"REWIND" AND "WRITE FILE GAP" FUNCTIONS.
                                        ;////////////////////////////////////////////////////////////////////////
                                        ;;*****************************************************************
                                        ;*TEST 63       TEST THAT "READY" SETS WHEN "REWIND" IS COMPLETED
                                        ;;*****************************************************************
005642  000004                  TST63:  SCOPE
005644  012767  000005  173314          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
005652  012767  005670  173226          MOV     #3$,$LPADR      ;;SET SCOPE LOOP ADDRESS
005660  000005                          RESET
005662  012767  005742  173300          MOV     #TST64,$ESCAPE  ;;ESCAPE TO TEST 64 ON ERROR
005670  010211                  3$:     MOV     DRIVE,@TACS             ;SELECT DRIVE
005672  005001                          CLR     R1                      ;WASTE SOME TIME
005674  012700  000144                  MOV     #100.,R0
005700  112714  000017                  MOVB    #REWIND!GO,@TACS                ;START A REWIND
005704  032714  000040          1$:     BIT     #READY,@TACS            ;SAMPLE READY
005710  001010                          BNE     2$                      ;GET OUT IF READY IS SET
005712  005201                          INC     R1
005714  001373                          BNE     1$
005716  005300                          DEC     R0
005720  001371                          BNE     1$
005722  032714  000040                  BIT     #READY,@TACS            ;IS "READY" BIT SET?
005726  001001                          BNE     2$                      ;BR IF YES
005730  104001                          ERROR   1                       ;ERROR--"READY" BIT DIDN'T SET
005732  032714  020000          2$:     BIT     #LEADER,@TACS           ;CHECK FOR CLEAR LEADER
005736  001001                          BNE     TST64           ;;BR IF CLEAR LEADER NE 0
005740  104001                          ERROR   1                       ;NOT ON CLEAR LEADER
                                                                        ;AFTER DOING A REWIND
                                        ;;*****************************************************************
                                        ;*TEST 64       TEST THAT "READY" SETS WHEN "WRITE FILE GAP" IS COMPLETED
                                        ;;*****************************************************************
005742  000004                  TST64:  SCOPE
005744  012767  000005  173214          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
005752  012767  005770  173126          MOV     #3$,$LPADR      ;;SET SCOPE LOOP ADDRESS
005760  000005                          RESET
005762  012767  006042  173200          MOV     #TST65,$ESCAPE  ;;ESCAPE TO TEST 65 ON ERROR
005770  010314                  3$:     MOV     DRIVE,@TACS             ;SELECT DRIVE
005772  005001                          CLR     R1                      ;WASTE SOME TIME
005774  012700  000144                  MOV     #100.,R0
006000  112714  000001                  MOVB    #WFG!GO,@TACS           ;START A WFG
006004  032714  000040          1$:     BIT     #READY,@TACS            ;SAMPLE READY
006010  001010                          BNE     2$                      ;GET OUT IF READY IS SET
006012  005201                          INC     R1
006014  001373                          BNE     1$
006016  005300                          DEC     R0
006020  001371                          BNE     1$
006022  032714  000040                  BIT     #READY,@TACS            ;IS "READY" BIT SET?
006026  001001                          BNE     2$                      ;BR IF YES
006030  104001                          ERROR   1                       ;ERROR--"READY" BIT DIDN'T SET
006032  032714  020000          2$:     BIT     #LEADER,@TACS           ;CHECK FOR CLEAR LEADER
006036  001401                          BEQ     TST65           ;;BR IF CLEAR LEADER EQ 0
006040  104001                          ERROR   1                       ;ON CLEAR LEADER
                                                                        ;AFTER DOING A WRITE FILE GAP
                                        ;;*****************************************************************
```

```
2054                                    ;*TEST 65       TEST "READY" CLEARS WHEN STARTING A "REWIND" FUNCTION
2055                                    ;;*****************************************************************
2056  006042  000004                    TST65:  SCOPE
2057  006044  012767  000005  173114            MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2058  006052  000005                            RESET
2059  006054  012701  000001                    MOV     #1,R1                   ;SET TIMER
2060  006060  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
2061  006062  104412                            WAITREADY                       ;WAIT FOR "READY"
2062  006064  112714  000017                    MOVB    #REWIND!GO,@TACS                ;START A "REWIND"
2063  006070  032714  000040            1$:     BIT     #READY,@TACS            ;CHECK "READY" BIT
2064  006074  001403                            BEQ     TST66           ;;BR IF "READY" = 0
2065  006076  006301                            ASL     R1                      ;IS TIME UP?
2066  006100  001373                            BNE     1$                      ;BR IF NO
2067  006102  104001                            ERROR   1                       ;"READY" FAILED TO CLEAR
2068                                    ;;*****************************************************************
2069                                    ;*TEST 66       TEST "READY" CLEARS WHEN STARTING A "WRITE FILE GAP" FUNCTION
2070                                    ;;*****************************************************************
2071  006104  000004                    TST66:  SCOPE
2072  006106  012767  000005  173052            MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2073  006114  000005                            RESET
2074  006116  012701  000001                    MOV     #1,R1                   ;SET TIMER
2075  006122  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
2076  006124  104412                            WAITREADY                       ;WAIT FOR "READY"
2077  006126  112714  000001                    MOVB    #WFG!GO,@TACS           ;START A "WRITE FILE GAP"
2078  006132  032714  000040            1$:     BIT     #READY,@TACS            ;CHECK "READY" BIT
2079  006136  001403                            BEQ     TST67           ;;BR IF "READY" = 0
2080  006140  006301                            ASL     R1                      ;IS TIME UP?
2081  006142  001373                            BNE     1$                      ;BR IF NO
2082  006144  104001                            ERROR   1                       ;"READY" FAILED TO CLEAR
2083                                    ;;*****************************************************************
2084                                    ;*TEST 67       TEST THAT "RESET" CANNOT ABORT A "REWIND"
2085                                    ;;*****************************************************************
2086  006146  000004                    TST67:  SCOPE
2087  006150  012767  000001  173010            MOV     #1,$TIMES       ;;DO 1 ITERATION
2088  006156  012767  006234  173004            MOV     #5$,$ESCAPE     ;;ESCAPE TO 5$ ON ERROR
2089  006164  000005                            RESET
2090  006166  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
2091  006170  104412                            WAITREADY                       ;GO WAIT FOR "READY" TO SET
2092  006172  112714  000017                    MOVB    #REWIND!GO,@TACS        ;LOAD REWIND AND GO
2093  006176  005067  000010                    CLR     3$
2094  006202  032714  000040            2$:     BIT     #READY,@TACS            ;WAIT FOR READY TO CLEAR
2095  006206  001404                            BEQ     4$
2096  006210  105227                            INCB    (PC)+
2097  006212  000000                    3$:     0
2098  006214  001372                            BNE     2$
2099  006216  104001                            ERROR   1                       ;"READY" FAILED TO CLEAR
2100  006220  000005                    4$:     RESET                           ;TRY TO STOP REWIND
2101  006222  050314                            BIS     DRIVE,@TACS             ;SELECT DRIVE
2102  006224  032714  000040                    BIT     #READY,@TACS            ;IS READY SET?
2103  006230  001401                            BEQ     5$                      ;BR IF NO
2104  006232  104001                            ERROR   1                       ;"READY" WAS SET
2105  006234  104412                    5$:     WAITREADY                       ;WAIT ON READY TO SET
2106                                    ;;*****************************************************************
2107                                    ;THIS TEST WILL START A "WRITE FILE GAP" AND WAIT FOR "READY" TO CLEAR
2108                                    ;AS SOON AS "READY" CLEARS A "RESET" IS PERFORMED (WHICH SHOULD
2109                                    ;CLEAR THE FUNCTION AND SET READY) THEN "READY" IS EXAMINED
```

```
                                        ;TO INSURE THAT IT IS SET
                                        ;;*************************************************************
                                        ;*TEST 70        TEST "RESET" WILL ABORT A "WRITE FILE GAP"
                                        ;;*************************************************************
006236  000004                          TST70:  SCOPE
006240  012767  000005  172720                  MOV     #5,$TIMES       ;;DO 5 ITERATIONS
006246  012767  006264  172632                  MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
006254  012767  006332  172706                  MOV     #TST71,$ESCAPE  ;;ESCAPE TO TEST 71 ON ERROR
006262  000005                                  RESET
006264  010314                          1$:     MOV     DRIVE,@TACS             ;SELECT DRIVE
006266  104412                                  WAITREADY                       ;WAIT ON READY
006270  112714  000001                          MOVB    #WFG!GO,@TACS           ;START A WRITE FILE GAP FUNCTION
006274  005067  000010                          CLR     3$
006300  032714  000040                  2$:     BIT     #READY,@TACS            ;WAIT FOR READY TO CLEAR
006304  001404                                  BEQ     4$                      ;BR IF "READY" = 0
006306  105227                                  INCB    (PC)+                   ;WASTE SOME TIME
006310  000000                          3$:     0
006312  001372                                  BNE     2$
006314  104001                                  ERROR   1                       ;"READY" FAILED TO CLEAR
006316  000005                          4$:     RESET                           ;KILL WRITE FILE GAP
006320  010314                                  MOV     DRIVE,@TACS
006322  032714  000040                          BIT     #READY,@TACS
006326  001001                                  BNE     TST71           ;;BR IF "RESET" SET "READY"
006330  104001                                  ERROR   1                       ;"READY" DIDN'T SET
                                        ;;*************************************************************
                                        ;*TEST 71        TEST "WFG" AND "REWIND" FOR NO ERRORS
                                        ;;*************************************************************
006332  000004                          TST71:  SCOPE
006334  012767  000005  172624                  MOV     #5,$TIMES       ;;DO 5 ITERATIONS
006342  012767  006362  172536                  MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
006350  012767  006424  172612                  MOV     #TST72,$ESCAPE  ;;ESCAPE TO TEST 72 ON ERROR
006356  000005                                  RESET
006360  010314                                  MOV     DRIVE,@TACS
006362  112714  000017                  1$:     MOVB    #REWIND!GO,@TACS        ;GO TO "CLEAR LEADER"
006366  104412                                  WAITREADY                       ;GO WAIT FOR "READY" TO SET
006370  005714                                  TST     @TACS                   ;IS "ERROR" SET?
006372  100001                                  BPL     2$                      ;BR IF NO
006374  104001                                  ERROR   1                       ;"ERROR" = 1 AFTER "REWIND"
006376  032714  020000                  2$:     BIT     #LEADER,@TACS           ;IS "CLEAR LEADER" = 1?
006402  001001                                  BNE     3$                      ;BR IF YES
006404  104001                                  ERROR   1                       ;NOT ON "CLEAR LEADER" AFTER "REWIND"
006406  112714  000001                  3$:     MOVB    #WFG!GO,@TACS           ;GET OFF OF "CLEAR LEADER"
006412  104412                                  WAITREADY                       ;GO WAIT FOR "READY" TO SET
006414  032714  120000                          BIT     #ERROR!LEADER,@TACS     ;SHOULD BE OFF OF "CLEAR LEADER"
                                                                                ;WITH NO "ERROR"
006420  001401                                  BEQ     .+4                     ;BR IF "WFG" MOVED TAPE WITH NO "ERROR"
006422  104001                                  ERROR   1                       ;"WFG" FAILED

                                        ;;*************************************************************
                                        ;THIS ISN'T A REAL TEST BUT A SMALL ROUTINE TO DETERMINE THE MAX.
                                        ;TIME FOR THE WAIT LOOPS (WAIT FOR "READY" AND "TRANSFER REQUEST")
                                        ;;*************************************************************
                                        ;*TEST 72        ROUTINE TO DETERMINE TIME OF WAIT LOOPS
                                        ;;*************************************************************
006424  000004                          TST72:  SCOPE
006426  012767  000001  172532                  MOV     #1,$TIMES       ;;DO 1 ITERATION
```

```
 2166  006434  005737  001100                TST     @#$PASS                 ;IS THIS THE FIRST PASS?
 2167  006440  001021                        BNE     TST73           ;;BR IF NO
 2168  006442  000005                        RESET
 2169  006444  010314                        MOV     DRIVE,@TACS             ;SELECT THE DRIVE
 2170  006446  112714  000017                MOVB    #REWIND!GO,@TACS        ;START A REWIND
 2171  006452  104412                        WAITREADY                       ;WAIT FOR READY
 2172  006454  112714  000001                MOVB    #WFG!GO,@TACS           ;WRITE A FILE GAP
 2173  006460  104412                        WAITREADY                       ;WAIT ON READY
 2174  006462  163737  012072  012116        SUB     @#HGHTIM,@#MAXCNT       ;GET THE TIME IT TOOK
 2175  006470  005237  012116                INC     @#MAXCNT                ;MAKE IT BIGGER
 2176  006474  006137  012116                ROL     @#MAXCNT
 2177  006500  006137  012116                ROL     @#MAXCNT
```

```
2178                                    ;////////////////////////////////////////////////////////////////////
2179                                    ;////////////////////////////////////////////////////////////////////
2180                                    ;THE FOLLOWING TESTS ARE USED TO CHECK VARIOUS OPERATIONS WHEN AT "CLEAR LEADER"
2181                                    ;////////////////////////////////////////////////////////////////////
2182                                    ;;****************************************************************
2183                                    ;*TEST 73       TEST THAT "CLEAR LEADER" GOES FALSE ON "REWIND"
2164                                    ;;****************************************************************
2185  006504  000004                    TST73:  SCOPE
2186  006506  012767  000005  172452            MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2187  006514  012767  006600  172446            MOV     #6$,$ESCAPE     ;;ESCAPE TO 6$ ON ERROR
2188  006522  000005                            RESET
2189  006524  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
2190  006526  112714  000017                    MOVB    #REWIND!GO,@TACS        ;GO TO CLEAR LEADER
2191  006532  104412                            WAITREADY                       ;GO WAIT FOR "READY" TO SET
2192  006534  032714  020000                    BIT     #LEADER,@TACS           ;AT "CLEAR LEADER"?
2193  006540  001001                            BNE     2$                      ;BR IF YES
2194  006542  104001                            ERROR   1                       ;ERROR--NOT AT CLEAR LEADER
2195  006544  005214                    2$:     INC     @TACS                   ;START ANOTHER REWIND
2196  006546  005067  000010                    CLR     4$
2197  006552  032714  000040            3$:     BIT     #READY,@TACS            ;WAIT ON "READY" TO CLEAR
2198  006556  001404                            BEQ     5$
2199  006560  105227                            INCB    (PC)+
2200  006562  000000                    4$:     0
2201  006564  001372                            BNE     3$
2202  006566  104001                            ERROR   1                       ;"READY" FAILED TO CLEAR
2203  006570  032714  020000            5$:     BIT     #LEADER,@TACS           ;DID "CLEAR LEADER" GO FALSE?
2204  006574  001401                            BEQ     6$                      ;BR IF YES
2205  006576  104001                            ERROR   1                       ;CLEAR LEADER DIDN'T CLEAR
2206  006600  005067  172364            6$:     CLR     $ESCAPE
2207  006604  104412                            WAITREADY
2208                                    ;;****************************************************************
2209                                    ;*TEST 74       TEST FOR "CLEAR LEADER ERROR" FOR "WRITE FILE GAP FUNCTION"
2210                                    ;;****************************************************************
2211  006606  000004                    TST74:  SCOPE
2212  006610  012767  000005  172350            MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2213  006616  012767  006646  172262            MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
2214  006624  012767  006722  172336            MOV     #TST75,$ESCAPE  ;;ESCAPE TO TEST 75 ON ERROR
2215  006632  000005                            RESET
2216  006634  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
2217  006636  104412                            WAITREADY                       ;MAKE SURE TA11 IS READY
2218  006640  112714  000017                    MOVB    #REWIND+GO,@TACS        ;LOAD REWIND AND GO
2219  006644  104412                            WAITREADY                       ;GO WAIT FOR "READY" TO SET
2220  006646  012700  000001            1$:     MOV     #1,R0
2221  006652  010314                            MOV     DRIVE,@TACS
2222  006654  112714  000001                    MOVB    #WFG!GO,@TACS           ;START A WRITE FILE GAP FUNCTION
2223  006660  032714  000040            3$:     BIT     #READY,@TACS            ;WAIT ON READY TO CLEAR
2224  006664  001402                            BEQ     4$
2225  006666  006300                            ASL     R0
2226  006670  100373                            BPL     3$
2227  006672  000005                    4$:     RESET
2228  006674  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
2229  006676  112714  000001                    MOVB    #WFG!GO,@TACS           ;START A WRITE FILE GAP FUNCTION
2230  006702  104412                            WAITREADY                       ;GO WAIT FOR "READY" TO SET
2231  006704  005714                            TST     @TACS                   ;DID ERROR BIT SET?
2232  006706  100401                            BMI     2$                      ;BR IF YES
2233  006710  104001                            ERROR   1                       ;"ERROR" BIT (BIT15) FAILED TO SET
```

```
2234  006712  032714  020000          2$:     BIT     #LEADER,@TACS           ;HOW ABOUT CLEAR LEADER BIT
2235  006716  001001                          BNE     TST75           ;;BR IF SET
2236  006720  104001                          ERROR   1               ;"CLEAR LEADER" NOT SET
2237                                  ;;**************************************************************
2238                                  ;*TEST 75        TEST "READY" CLEARS WHEN STARTING A "WRITE" FUNCTION
2239                                  ;;**************************************************************
2240  006722  000004                  TST75:  SCOPE
2241  006724  012767  000005  172234          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2242  006732  000005                          RESET
2243  006734  012701  000001                  MOV     #1,R1                   ;SET TIMER
2244  006740  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
2245  006742  104412                          WAITREADY                       ;WAIT FOR "READY"
2246  006744  112714  000003                  MOVB    #WRITE!GO,@TACS         ;START A "WRITE"
2247  006750  032714  000040          1$:     BIT     #READY,@TACS            ;CHECK "READY" BIT
2248  006754  001403                          BEQ     TST76           ;;BR IF "READY" = 0
2249  006756  006301                          ASL     R1                      ;IS TIME UP?
2250  006760  001373                          BNE     1$                      ;BR IF NO
2251  006762  104001                          ERROR   1               ;"READY" FAILED TO CLEAR
2252                                  ;;**************************************************************
2253                                  ;*TEST 76        TEST "READY" CLEARS WHEN STARTING A "READ" FUNCTION
2254                                  ;;**************************************************************
2255  006764  000004                  TST76:  SCOPE
2256  006766  012767  000005  172172          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2257  006774  000005                          RESET
2258  006776  012701  000001                  MOV     #1,R1                   ;SET TIMER
2259  007002  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
2260  007004  104412                          WAITREADY                       ;WAIT FOR "READY"
2261  007006  112714  000005                  MOVB    #READ!GO,@TACS          ;START A "READ"
2262  007012  032714  000040          1$:     BIT     #READY,@TACS            ;CHECK "READY" BIT
2263  007016  001403                          BEQ     TST77           ;;BR IF "READY" = 0
2264  007020  006301                          ASL     R1                      ;IS TIME UP?
2265  007022  001373                          BNE     1$                      ;BR IF NO
2266  007024  104001                          ERROR   1               ;"READY" FAILED TO CLEAR
2267                                  ;;**************************************************************
2268                                  ;*TEST 77        TEST "READY" CLEARS WHEN STARTING A "BACK SPACE FILE GAP" FUNCTION
2269                                  ;;**************************************************************
2270  007026  000004                  TST77:  SCOPE
2271  007030  012767  000005  172130          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2272  007036  000005                          RESET
2273  007040  012701  000001                  MOV     #1,R1                   ;SET TIMER
2274  007044  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
2275  007046  104412                          WAITREADY                       ;WAIT FOR "READY"
2276  007050  112714  000007                  MOVB    #BSFG!GO,@TACS          ;START A "BACK SPACE FILE GAP"
2277  007054  032714  000040          1$:     BIT     #READY,@TACS            ;CHECK "READY" BIT
2278  007060  001403                          BEQ     TST100          ;;BR IF "READY" = 0
2279  007062  006301                          ASL     R1                      ;IS TIME UP?
2280  007064  001373                          BNE     1$                      ;BR IF NO
2281  007066  104001                          ERROR   1               ;"READY" FAILED TO CLEAR
2282                                  ;;**************************************************************
2283                                  ;*TEST 100       TEST "READY" CLEARS WHEN STARTING A "BACK SPACE BLOCK GAP" FUNCTION
2284                                  ;;**************************************************************
2285  007070  000004                  TST100: SCOPE
2286  007072  012767  000005  172066          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2287  007100  000005                          RESET
2288  007102  012701  000001                  MOV     #1,R1                   ;SET TIMER
2289  007106  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
```

```
 2290  007110  104412                        WAITREADY                       ;WAIT FOR "READY"
 2291  007112  112714  000011                MOVB    #BSBG!GO,@TACS          ;START A "BACK SPACE BLOCK GAP"
 2292  007116  032714  000040        1$:     BIT     #READY,@TACS            ;CHECK "READY" BIT
 2293  007122  001403                        BEQ     TST101          ;;BR IF "READY" = 0
 2294  007124  006301                        ASL     R1                      ;IS TIME UP?
 2295  007126  001373                        BNE     1$                      ;BR IF NO
 2296  007130  104001                        ERROR   1                       ;"READY" FAILED TO CLEAR
 2297                                ;;*****************************************************************
 2298                                ;*TEST 101      TEST "READY" CLEARS WHEN STARTING A "SPACE FORWARD FILE GAP" FUNCTION
 2299                                ;;*****************************************************************
 2300  007132  000004                TST101: SCOPE
 2301  007134  012767  000005  172024        MOV     #5,$TIMES       ;;DO 5 ITERATIONS
 2302  007142  000005                        RESET
 2303  007144  012701  000001                MOV     #1,R1                   ;SET TIMER
 2304  007150  010314                        MOV     DRIVE,@TACS             ;SELECT DRIVE
 2305  007152  104412                        WAITREADY                       ;WAIT FOR "READY"
 2306  007154  112714  000013                MOVB    #SFFG!GO,@TACS          ;START A "SPACE FORWARD FILE GAP"
 2307  007160  032714  000040        1$:     BIT     #READY,@TACS            ;CHECK "READY" BIT
 2308  007164  001403                        BEQ     TST102          ;;BR IF "READY" = 0
 2309  007166  006301                        ASL     R1                      ;IS TIME UP?
 2310  007170  001373                        BNE     1$                      ;BR IF NO
 2311  007172  104001                        ERROR   1                       ;"READY" FAILED TO CLEAR
 2312                                ;;*****************************************************************
 2313                                ;*TEST 102      TEST "READY" CLEARS WHEN STARTING A "SPACE FORWARD BLOCK GAP" FUNCTION
 2314                                ;;*****************************************************************
 2315  007174  000004                TST102: SCOPE
 2316  007176  012767  000005  171762        MOV     #5,$TIMES       ;;DO 5 ITERATIONS
 2317  007204  000005                        RESET
 2318  007206  012701  000001                MOV     #1,R1                   ;SET TIMER
 2319  007212  010314                        MOV     DRIVE,@TACS             ;SELECT DRIVE
 2320  007214  104412                        WAITREADY                       ;WAIT FOR "READY"
 2321  007216  112714  000015                MOVB    #SFBG!GO,@TACS          ;START A "SPACE FORWARD BLOCK GAP"
 2322  007222  032714  000040        1$:     BIT     #READY,@TACS            ;CHECK "READY" BIT
 2323  007226  001403                        BEQ     TST103          ;;BR IF "READY" = 0
 2324  007230  006301                        ASL     R1                      ;IS TIME UP?
 2325  007232  001373                        BNE     1$                      ;BR IF NO
 2326  007234  104001                        ERROR   1                       ;"READY" FAILED TO CLEAR
 2327                                ;;*****************************************************************
 2328                                ;*TEST 103      TEST FOR "CLEAR LEADER ERROR" FOR "WRITE FUNCTION"
 2329                                ;;*****************************************************************
 2330  007236  000004                TST103: SCOPE
 2331  007240  012767  000005  171720        MOV     #5,$TIMES       ;;DO 5 ITERATIONS
 2332  007246  012767  007276  171632        MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
 2333  007254  012767  007370  171706        MOV     #TST104,$ESCAPE ;;ESCAPE TO TEST 104 ON ERROR
 2334  007262  000005                        RESET
 2335  007264  010314                        MOV     DRIVE,@TACS             ;SELECT DRIVE
 2336  007266  104412                        WAITREADY                       ;MAKE SURE TA11 IS READY
 2337  007270  112714  000017                MOVB    #REWIND+GO,@TACS        ;LOAD REWIND AND GO
 2338  007274  104412                        WAITREADY                       ;GO WAIT FOR "READY" TO SET
 2339  007276  012700  000001        1$:     MOV     #1,R0
 2340  007302  010314                        MOV     DRIVE,@TACS
 2341  007304  112714  000003                MOVB    #WRITE!GO,@TACS         ;START A WRITE FUNCTION
 2342  007310  032714  000040        3$:     BIT     #READY,@TACS            ;WAIT ON READY TO CLEAR
 2343  007314  001402                        BEQ     4$
 2344  007316  006300                        ASL     R0
 2345  007320  100373                        BPL     3$
```

```
2346  007322  000005                    4$:     RESET
2347  007324  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
2348  007326  112714  000003                    MOVB    #WRITE!GO,@TACS         ;START A WRITE FUNCTION
2349  007332  012700  000001                    MOV     #1,R0                   ;WAIT A WHILE FOR XFER REQ.
2350  007336  105714                    5$:     TSTB    @TACS                   ;XFER REQ = 1?
2351  007340  100402                            BMI     6$                      ;BR IF YES
2352  007342  005200                            INC     R0                      ;WAITED LONG ENOUGH?
2353  007344  001374                            BNE     5$                      ;BR IF NO
2354  007346  105715                    6$:     TSTB    @TADB                   ;CLEAR TRANSFER REQ.
2355  007350  104412                            WAITREADY                       ;GO WAIT FOR "READY" TO SET
2356  007352  005714                            TST     @TACS                   ;DID ERROR BIT SET?
2357  007354  100401                            BMI     2$                      ;BR IF YES
2358  007356  104001                            ERROR   1                       ;"ERROR" BIT (BIT15) FAILED TO SET
2359  007360  032714  020000            2$:     BIT     #LEADER,@TACS           ;HOW ABOUT CLEAR LEADER BIT
2360  007364  001001                            BNE     TST104          ;;BR IF SET
2361  007366  104001                            ERROR   1                       ;"CLEAR LEADER" NOT SET
2362                                    ;;**************************************************************
2363                                    ;*TEST 104       TEST FOR "CLEAR LEADER ERROR" FOR "READ FUNCTION"
2364                                    ;;**************************************************************
2365  007370  000004                    TST104: SCOPE
2366  007372  012767  000005  171566            MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2367  007400  012767  007430  171500            MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
2368  007406  012767  007504  171554            MOV     #TST105,$ESCAPE ;;ESCAPE TO TEST 105 ON ERROR
2369  007414  000005                            RESET
2370  007416  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
2371  007420  104412                            WAITREADY                       ;MAKE SURE TA11 IS READY
2372  007422  112714  000017                    MOVB    #REWIND+GO,@TACS        ;LOAD REWIND AND GO
2373  007426  104412                            WAITREADY                       ;GO WAIT FOR "READY" TO SET
2374  007430  012700  000001            1$:     MOV     #1,R0
2375  007434  010314                            MOV     DRIVE,@TACS
2376  007436  112714  000005                    MOVB    #READ!GO,@TACS          ;START A READ FUNCTION
2377  007442  032714  000040            3$:     BIT     #READY,@TACS            ;WAIT ON READY TO CLEAR
2378  007446  001402                            BEQ     4$
2379  007450  006300                            ASL     R0
2380  007452  100373                            BPL     3$
2381  007454  000005                    4$:     RESET
2382  007456  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
2383  007460  112714  000005                    MOVB    #READ!GO,@TACS          ;START A READ FUNCTION
2384  007464  104412                            WAITREADY                       ;GO WAIT FOR "READY" TO SET
2385  007466  005714                            TST     @TACS                   ;DID ERROR BIT SET?
2386  007470  100401                            BMI     2$                      ;BR IF YES
2387  007472  104001                            ERROR   1                       ;"ERROR" BIT (BIT15) FAILED TO SET
2388  007474  032714  020000            2$:     BIT     #LEADER,@TACS           ;HOW ABOUT CLEAR LEADER BIT
2389  007500  001001                            BNE     TST105          ;;BR IF SET
2390  007502  104001                            ERROR   1                       ;"CLEAR LEADER" NOT SET
2391                                    ;;**************************************************************
2392                                    ;*TEST 105       TEST FOR "CLEAR LEADER ERROR" FOR "BACK SPACE FILE GAP FUNCTION"
2393                                    ;;**************************************************************
2394  007504  000004                    TST105: SCOPE
2395  007506  012767  000005  171452            MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2396  007514  012767  007544  171364            MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
2397  007522  012767  007620  171440            MOV     #TST106,$ESCAPE ;;ESCAPE TO TEST 106 ON ERROR
2398  007530  000005                            RESET
2399  007532  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
2400  007534  104412                            WAITREADY                       ;MAKE SURE TA11 IS READY
2401  007536  112714  000017                    MOVB    #REWIND+GO,@TACS        ;LOAD REWIND AND GO
```

```
2402  007542  104412                          WAITREADY                       ;GO WAIT FOR "READY" TO SET
2403  007544  012700  000001          1$:     MOV     #1,R0
2404  007550  010314                          MOV     DRIVE,@TACS
2405  007552  112714  000007                  MOVB    #BSFG!GO,@TACS          ;START A BACK SPACE FILE GAP FUNCTION
2406  007556  032714  000040          3$:     BIT     #READY,@TACS            ;WAIT ON READY TO CLEAR
2407  007562  001402                          BEQ     4$
2408  007564  006300                          ASL     R0
2409  007566  100373                          BPL     3$
2410  007570  000005                  4$:     RESET
2411  007572  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
2412  007574  112714  000007                  MOVB    #BSFG!GO,@TACS          ;START A BACK SPACE FILE GAP FUNCTION
2413  007600  104412                          WAITREADY                       ;GO WAIT FOR "READY" TO SET
2414  007602  005714                          TST     @TACS                   ;DID ERROR BIT SET?
2415  007604  100401                          BMI     2$                      ;BR IF YES
2416  007606  104001                          ERROR   1                       ;"ERROR" BIT (BIT15) FAILED TO SET
2417  007610  032714  020000          2$:     BIT     #LEADER,@TACS           ;HOW ABOUT CLEAR LEADER BIT
2418  007614  001001                          BNE     TST106          ;;BR IF SET
2419  007616  104001                          ERROR   1                       ;"CLEAR LEADER" NOT SET
2420                                  ;;*****************************************************************
2421                                  ;*TEST 106       TEST FOR "CLEAR LEADER ERROR" FOR "BACK SPACE BLOCK GAP FUNCTION"
2422                                  ;;*****************************************************************
2423  007620  000004                  TST106: SCOPE
2424  007622  012767  000005  171336          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2425  007630  012767  007660  171250          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
2426  007636  012767  007734  171324          MOV     #TST107,$ESCAPE ;;ESCAPE TO TEST 107 ON ERROR
2427  007644  000005                          RESET
2428  007646  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
2429  007650  104412                          WAITREADY                       ;MAKE SURE TA11 IS READY
2430  007652  112714  000017                  MOVB    #REWIND+GO,@TACS        ;LOAD REWIND AND GO
2431  007656  104412                          WAITREADY                       ;GO WAIT FOR "READY" TO SET
2432  007660  012700  000001          1$:     MOV     #1,R0
2433  007664  010314                          MOV     DRIVE,@TACS
2434  007666  112714  000011                  MOVB    #BSBG!GO,@TACS          ;START A BACK SPACE BLOCK GAP FUNCTION
2435  007672  032714  000040          3$:     BIT     #READY,@TACS            ;WAIT ON READY TO CLEAR
2436  007676  001402                          BEQ     4$
2437  007700  006300                          ASL     R0
2438  007702  100373                          BPL     3$
2439  007704  000005                  4$:     RESET
2440  007706  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
2441  007710  112714  000011                  MOVB    #BSBG!GO,@TACS          ;START A BACK SPACE BLOCK GAP FUNCTION
2442  007714  104412                          WAITREADY                       ;GO WAIT FOR "READY" TO SET
2443  007716  005714                          TST     @TACS                   ;DID ERROR BIT SET?
2444  007720  100401                          BMI     2$                      ;BR IF YES
2445  007722  104001                          ERROR   1                       ;"ERROR" BIT (BIT15) FAILED TO SET
2446  007724  032714  020000          2$:     BIT     #LEADER,@TACS           ;HOW ABOUT CLEAR LEADER BIT
2447  007730  001001                          BNE     TST107          ;;BR IF SET
2448  007732  104001                          ERROR   1                       ;"CLEAR LEADER" NOT SET
2449                                  ;;*****************************************************************
2450                                  ;*TEST 107:      TEST FOR "CLEAR LEADER ERROR" FOR "SPACE FWD FILE GAP FUNCTION"
2451                                  ;;*****************************************************************
2452  007734  000004                  TST107: SCOPE
2453  007736  012767  000005  171222          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2454  007744  012767  007774  171134          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
2455  007752  012767  010050  171210          MOV     #TST110,$ESCAPE ;;ESCAPE TO TEST 110 ON ERROR
2456  007760  000005                          RESET
2457  007762  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
```

```
2458  007764  104412                          WAITREADY                       ;MAKE SURE TA11 IS READY
2459  007766  112714  000017                  MOVB    #REWIND+GO,@TACS        ;LOAD REWIND AND GO
2460  007772  104412                          WAITREADY                       ;GO WAIT FOR "READY" TO SET
2461  007774  012700  000001          1$:     MOV     #1,R0
2462  010000  010314                          MOV     DRIVE,@TACS
2463  010002  112714  000013                  MOVB    #SFFG!GO,@TACS          ;START A SPACE FWD FILE GAP FUNCTION
2464  010006  032714  000040          3$:     BIT     #READY,@TACS            ;WAIT ON READY TO CLEAR
2465  010012  001402                          BEQ     4$
2466  010014  006300                          ASL     R0
2467  010016  100373                          BPL     3$
2468  010020  000005                  4$:     RESET
2469  010022  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
2470  010024  112714  000013                  MOVB    #SFFG!GO,@TACS          ;START A SPACE FWD FILE GAP FUNCTION
2471  010030  104412                          WAITREADY                       ;GO WAIT FOR "READY" TO SET
2472  010032  005714                          TST     @TACS                   ;DID ERROR BIT SET?
2473  010034  100401                          BMI     2$                      ;BR IF YES
2474  010036  104001                          ERROR   1                       ;"ERROR" BIT (BIT15) FAILED TO SET
2475  010040  032714  020000          2$:     BIT     #LEADER,@TACS           ;HOW ABOUT CLEAR LEADER BIT
2476  010044  001001                          BNE     TST110          ;;BR IF SET
2477  010046  104001                          ERROR   1                       ;"CLEAR LEADER" NOT SET
2478                                  ;;*****************************************************************
2479                                  ;*TEST 110       TEST FOR "CLEAR LEADER ERROR" FOR "SPACE FWD BLOCK GAP FUNCTION"
2480                                  ;;*****************************************************************
2481  010050  000004                  TST110: SCOPE
2482  010052  012767  000005  171106          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2483  010060  012767  010110  171020          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
2484  010066  012767  010164  171074          MOV     #TST111,$ESCAPE ;;ESCAPE TO TEST 111 ON ERROR
2485  010074  000005                          RESET
2486  010076  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
2487  010100  104412                          WAITREADY                       ;MAKE SURE TA11 IS READY
2488  010102  112714  000017                  MOVB    #REWIND+GO,@TACS        ;LOAD REWIND AND GO
2489  010106  104412                          WAITREADY                       ;GO WAIT FOR "READY" TO SET
2490  010110  012700  000001          1$:     MOV     #1,R0
2491  010114  010314                          MOV     DRIVE,@TACS
2492  010116  112714  000015                  MOVB    #SFBG!GO,@TACS          ;START A SPACE FWD BLOCK GAP FUNCTION
2493  010122  032714  000040          3$:     BIT     #READY,@TACS            ;WAIT ON READY TO CLEAR
2494  010126  001402                          BEQ     4$
2495  010130  006300                          ASL     R0
2496  010132  100373                          BPL     3$
2497  010134  000005                  4$:     RESET
2498  010136  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
2499  010140  112714  000015                  MOVB    #SFBG!GO,@TACS          ;START A SPACE FWD BLOCK GAP FUNCTION
2500  010144  104412                          WAITREADY                       ;GO WAIT FOR "READY" TO SET
2501  010146  005714                          TST     @TACS                   ;DID ERROR BIT SET?
2502  010150  100401                          BMI     2$                      ;BR IF YES
2503  010152  104001                          ERROR   1                       ;"ERROR" BIT (BIT15) FAILED TO SET
2504  010154  032714  020000          2$:     BIT     #LEADER,@TACS           ;HOW ABOUT CLEAR LEADER BIT
2505  010160  001001                          BNE     TST111          ;;BR IF SET
2506  010162  104001                          ERROR   1                       ;"CLEAR LEADER" NOT SET
2507                                  ;;*****************************************************************
2508                                  ;*TEST 111       TEST "GO" BIT IS WRITE ONLY
2509                                  ;;*****************************************************************
2510  010164  000004                  TST111: SCOPE
2511  010166  012767  000005  170772          MOV     #5,$TIMES       ;;DO 5 ITERATIONS
2512  010174  012767  010206  170704          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
2513  010202  000005                          RESET
```

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2514  010204  010314                          MOV     DRIVE,@TACS             ;LOAD THE DRIVE
2515  010206  052714  000001          1$:     BIS     #1,@TACS                ;SET "GO" BIT
2516  010212  032714  000001                  BIT     #1,@TACS                ;TRY TO READ IT
2517  010216  001401                          BEQ     2$                      ;NO ERROR IF "GO" BIT=0
2518  010220  104001                          ERROR   1                       ;GO BIT WASN'T 0
2519  010222  104412                  2$:     WAITREADY                       ;WAIT ON "READY"
```

```
                                        ;////////////////////////////////////////////////////////////////////////
                                        ;////////////////////////////////////////////////////////////////////////
                                        ;THE FOLLOWING TESTS CHECKS FOR PROPER OPERATION OF "TRANSFER REQUEST"
                                        ;AND "ILBS" FOR BOTH WRITING AND READING
                                        ;////////////////////////////////////////////////////////////////////////

                                        ;;*****************************************************************
                                        ;*TEST 112       TEST TRANSFER REQUEST & ILBS FOR "WRITE"
                                        ;;*****************************************************************
010224  000004                          TST112: SCOPE
010226  012767  000012  170732                  MOV     #10.,$TIMES     ;;DO 10. ITERATIONS
010234  012767  010276  170644                  MOV     #8$,$LPADR      ;;SET SCOPE LOOP ADDRESS
010242  012767  010374  170720                  MOV     #TST113,$ESCAPE ;;ESCAPE TO TEST 113 ON ERROR
010250  000005                                  RESET
010252  010314                                  MOV     DRIVE,@TACS             ;SELECT DRIVE
010254  104412                                  WAITREADY                       ;INSURE DRIVE IS READY
010256  112714  000017                          MOVB    #REWIND+GO,@TACS        ;GO TO BOT
010262  104412                                  WAITREADY                       ;GO WAIT FOR "READY" TO SET
010264  112714  000001                          MOVB    #WFG+GO,@TACS           ;GET OFF OF CLEAR LEADER
010270  104412                                  WAITREADY                       ;GO WAIT FOR "READY" TO SET
010272  000005                                  RESET
010274  010314                                  MOV     DRIVE,@TACS
010276  112714  000002          8$:             MOVB    #WRITE,@TACS            ;LOAD "WRITE" FUNCTION
010302  012700  000001                          MOV     #1,R0
010306  006300                  1$:             ASL     R0                      ;KILL A LITTLE TIME
010310  001376                                  BNE     1$
010312  105714                                  TSTB    @TACS
010314  100001                                  BPL     2$                      ;INSURE XFER REQ=0
010316  104001                                  ERROR   1                       ;XFER REQ. SET BEFORE "GO"
010320  005214                  2$:             INC     @TACS                   ;SET "GO"
010322  012700  000001                          MOV     #1,R0
010326  006300                  3$:             ASL     R0                      ;KILL A LITTLE TIME
010330  001376                                  BNE     3$
010332  105714                                  TSTB    @TACS
010334  100401                                  BMI     4$                      ;CHECK THAT XFER EQ=1
010336  104001                                  ERROR   1                       ;XFER REQ FAILED TO SET
010340  105015                  4$:             CLRB    @TADB                   ;KNOCK DOWN XFER REQ.
010342  105714                                  TSTB    @TACS
010344  100001                                  BPL     5$                      ;CHECK THAT "XFER REQ" IS CLEAR
010346  104001                                  ERROR   1                       ;XFER REQ FAILED TO CLEAR
010350  104413                  5$:             WAITXFER                        ;GO WAIT ON "TRANSFER REQUEST" TO SET
010352  052714  000020                          BIS     #ILBS,@TACS             ;SET ILBS--WRITE CRC
010356  105714                                  TSTB    @TACS                   ;DID "XFER REQ" CLEAR?
010360  100001                                  BPL     6$                      ;BR IF YES
010362  104001                                  ERROR   1                       ;"ILBS" DIDN'T CLEAR "XFER REQ"
010364  104412                  6$:             WAITREADY                       ;GO WAIT FOR "READY" TO SET
010366  005714                                  TST     @TACS                   ;ANY ERROR?
010370  100001                                  BPL     TST113          ;;BR IF NO
010372  104001                                  ERROR   1                       ;AN ERROR OCCURRED
                                        ;;*****************************************************************
                                        ;*TEST 113       TEST "TRANSFER REQ" AND "ILBS" FOR "READ"
                                        ;;*****************************************************************
010374  000004                          TST113: SCOPE
010376  012767  000012  170562                  MOV     #10.,$TIMES     ;;DO 10. ITERATIONS
010404  012767  010472  170474                  MOV     #4$,$LPADR      ;;SET SCOPE LOOP ADDRESS
010412  012767  010534  170550                  MOV     #TST114,$ESCAPE ;;ESCAPE TO TEST 114 ON ERROR
```

```
2576  010420  000005                        RESET
2577  010422  010314                        MOV     DRIVE,@TACS             ;SELECT DRIVE
2578  010424  104412                        WAITREADY                       ;CHECK READY
2579  010426  052714  000017                BIS     #REWIND+GO,@TACS
2580  010432  104412                        WAITREADY                       ;GO WAIT FOR "READY" TO SET
2581  010434  112714  000001                MOVB    #WFG!GO,@TACS           ;GET OFF OF "CLEAR LEADER"
2582  010440  104412                        WAITREADY                       ;GO WAIT ON "READY"
2583  010442  112714  000003                MOVB    #WRITE!GO,@TACS         ;START A WRITE
2584  010446  104413                        WAITXFER
2585  010450  112715  000377                MOVB    #377,@TADB              ;WRITE ON TAPE
2586  010454  104413                        WAITXFER
2587  010456  112715  000377                MOVB    #377,@TADB              ;WRITE ON TAPE
2588  010462  104413                        WAITXFER
2589  010464  052714  000020                BIS     #ILBS,@TACS
2590  010470  104412                        WAITREADY
2591  010472  112714  000017        4$:     MOVB    #REWIND!GO,@TACS
2592  010476  104412                        WAITREADY
2593  010500  112714  000005                MOVB    #READ!GO,@TACS          ;START A READ
2594  010504  104413                        WAITXFER                        ;GO WAIT ON "TRANSFER REQUEST" TO SET
2595  010506  005715                        TST     @TADB                   ;CLEAR XFER REQ
2596  010510  105714                        TSTB    @TACS                   ;DID XFER REQ CLEAR?
2597  010512  100001                        BPL     2$                      ;BR IF YES
2598  010514  104001                        ERROR   1                       ;XFER REQ FAILED TO CLEAR
2599  010516  104413        2$:     WAITXFER                                ;GO WAIT ON "TRANSFER REQUEST" TO SET
2600  010520  052714  000020                BIS     #ILBS,@TACS             ;START ILBS--CLEARS XFER REQ
2601  010524  105714                        TSTB    @TACS                   ;DID XFER REQ CLEAR?
2602  010526  100001                        BPL     3$                      ;BR IF YES
2603  010530  104001                        ERROR   1                       ;XFER REQ FAILED TO CLEAR
2604  010532  104412        3$:     WAITREADY                               ;GO WAIT FOR "READY" TO SET
2605                        ;;**************************************************************
2606                        ;*TEST 114      TEST THAT TADB (READ BUFFER) INITIALIZES TO 0'S
2607                        ;;**************************************************************
2608  010534  000004        TST114: SCOPE
2609  010536  012767  010546  170342        MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
2610  010544  000005                        RESET
2611  010546  011500        1$:     MOV     @TADB,R0                        ;PUT TADB IN R0
2612  010550  001401                        BEQ     TST115          ;;CHECK FOR ALL ZEROS
2613  010552  104006                        ERROR   6                       ;TADB NOT ALL ZEROS
2614                        ;;**************************************************************
2615                        ;*TEST 115      TEST TADB (WRITE BUFFER) FOR WRITE ONLY
2616                        ;;**************************************************************
2617  010554  000004        TST115: SCOPE
2618  010556  012715  177777                MOV     #-1,@TADB               ;LOAD TADB WITH 1'S
2619  010562  011500                        MOV     @TADB,R0                ;PUT TADB IN R0
2620  010564  001401                        BEQ     TST116          ;;BR IF IT DIDN'T CHANGE
2621  010566  104006                        ERROR   6                       ;ERROR
```

```
                                        ;;**********************************************************************
                                        ;*TEST 116      FLOAT A "1" THROUGH TADB
                                        ;;**********************************************************************
010570  000004                  TST116: SCOPE
010572  012767  000012  170366          MOV     #10.,$TIMES     ;;DO 10. ITERATIONS
010600  012767  010634  170300          MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
010606  012767  010666  170354          MOV     #4$,$ESCAPE     ;;ESCAPE TO 4$ ON ERROR
010614  000005                          RESET
010616  010314                          MOV     DRIVE,@TACS
010620  112714  000017                  MOVB    #REWIND!GO,@TACS        ;POSITION THE TAPE
010624  104412                          WAITREADY                       ;GO WAIT FOR "READY" TO SET
010626  112714  000001                  MOVB    #WFG!GO,@TACS           ;GET OFF OF "CLEAR LEADER"
010632  104412                          WAITREADY                       ;GO WAIT FOR "READY" TO SET
010634  012700  000001          1$:     MOV     #1,R0                   ;INITIALIZE THE PATTERN
010640  112714  000003                  MOVB    #WRITE!GO,@TACS         ;START A WRITE FUNCTION
010644  104413                          WAITXFER                        ;GO WAIT ON"TRANSFER REQUEST" TO SET
010646  110015          2$:     MOVB    R0,@TADB                ;LOAD TADB WRITE BUFFER
010650  104413                          WAITXFER                        ;WAIT ON "TRANSFER REQUEST"
010652  011501                          MOV     @TADB,R1                ;READ THE DATA BUFFER
010654  120001                          CMPB    R0,R1                   ;CHECK THE DATA
010656  001401                          BEQ     3$                      ;BR IF DATA IS GOOD
010660  104007                          ERROR   7                       ;ERROR---TADB NOT EQUAL R0
010662  106300          3$:     ASLB    R0                      ;NEXT PATTERN
010664  103370                          BCC     2$                      ;BR IF MORE TO DO
010666  152714  000020          4$:     BISB    #ILBS,@TACS             ;WRITE CRC
010672  104412                          WAITREADY                       ;GO WAIT FOR "READY" TO SET
```

```
                                        ;;**********************************************************************
                                        ;*TEST 117      FLOAT A "0" THROUGH TADB
                                        ;;**********************************************************************
010674  000004                          TST117: SCOPE
010676  012767  000012  170262                  MOV     #10.,$TIMES     ;;DO 10. ITERATIONS
010704  012767  010740  170174                  MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
010712  012767  010772  170250                  MOV     #4$,$ESCAPE     ;;ESCAPE TO 4$ ON ERROR
010720  000005                                  RESET
010722  010314                                  MOV     DRIVE,@TACS
010724  112714  000017                          MOVB    #REWIND!GO,@TACS        ;POSITION THE TAPE
010730  104412                                  WAITREADY                       ;GO WAIT FOR "READY" TO SET
010732  112714  000001                          MOVB    #WFG!GO,@TACS           ;GET OFF OF "CLEAR LEADER"
010736  104412                                  WAITREADY                       ;GO WAIT FOR "READY" TO SET
010740  012700  177776          1$:             MOV     #-2,R0                  ;INITIALIZE THE PATTERN
010744  112714  000003                          MOVB    #WRITE!GO,@TACS         ;START A WRITE FUNCTION
010750  104413                                  WAITXFER                        ;GO WAIT ON "TRANSFER REQUEST" TO SET
010752  110015                  2$:             MOVB    R0,@TADB                ;LOAD INTO WRITE BUFFER
010754  104413                                  WAITXFER                        ;WAIT ON "TRANSFER REQUEST"
010756  011501                                  MOV     @TADB,R1                ;READ THE DATA BUFFER
010760  120001                                  CMPB    R0,R1                   ;CHECK THE DATA
010762  001401                                  BEQ     3$                      ;BR IF DATA IS GOOD
010764  104007                                  ERROR   7                       ;ERROR---TADB NOT EQUAL R0
010766  106300                  3$:             ASLB    R0                      ;NEXT PATTERN
010770  103770                                  BCS     2$                      ;BR IF MORE TO DO
010772  152714  000020          4$:             BISB    #ILBS,@TACS             ;WRITE CRC
010776  104412                                  WAITREADY                       ;GO WAIT FOR "READY" TO SET
```

```
2674                                    ;;**********************************************************************
2675                                    ;*TEST 120      COUNT PATTERN TO TADB
2676                                    ;;**********************************************************************
2677  011000  000004                    TST120: SCOPE
2678  011002  012767  000012  170156            MOV     #10.,$TIMES     ;;DO 10. ITERATIONS
2679  011010  012767  011044  170070            MOV     #1$,$LPADR      ;;SET SCOPE LOOP ADDRESS
2680  011016  012767  011074  170144            MOV     #4$,$ESCAPE     ;;ESCAPE TO 4$ ON ERROR
2681  011024  000005                            RESET
2682  011026  010314                            MOV     DRIVE,@TACS
2683  011030  112714  000017                    MOVB    #REWIND!GO,@TACS        ;POSITION THE TAPE
2684  011034  104412                            WAITREADY                       ;GO WAIT FOR "READY" TO SET
2685  011036  112714  000001                    MOVB    #WFG!GO,@TACS           ;GET OFF OF "CLEAR LEADER"
2686  011042  104412                            WAITREADY                       ;GO WAIT FOR "READY" TO SET
2687  011044  005000                    1$:     CLR     R0                      ;INITIALIZE THE COUNT PATTERN
2688  011046  112714  000003                    MOVB    #WRITE!GO,@TACS         ;START A WRITE FUNCTION
2689  011052  104413                            WAITXFER                        ;GO WAIT ON "TRANSFER REQUEST" TO SET
2690  011054  110015                    2$:     MOVB    R0,@TADB                ;LOAD TADB WRITE BUFFER
2691  011056  104413                            WAITXFER                        ;WAIT ON "TRANSFER REQUEST"
2692  011060  011501                            MOV     @TADB,R1                ;READ THE DATA BUFFER
2693  011062  120001                            CMPB    R0,R1                   ;CHECK THE DATA
2694  011064  001401                            BEQ     3$                      ;BR IF DATA IS GOOD
2695  011066  104005                            ERROR   5                       ;ERROR---TADB NOT EQUAL R0
2696  011070  105200                    3$:     INCB    R0                      ;UPDATE THE PATTERN
2697  011072  001370                            BNE     2$                      ;LOOP IF NON-ZERO
2698  011074  152714  000020            4$:     BISB    #ILBS,@TACS             ;WRITE CRC
2699  011100  104412                            WAITREADY                       ;GO WAIT FOR "READY" TO SET
```

```
                                        ;;*****************************************************************
                                        ;*TEST 121       END OF TEST CODE
                                        ;;*****************************************************************
011102  000004                          TST121: SCOPE
011104  012767  000001  170054                  MOV     #1,$TIMES       ;;DO 1 ITERATION
011112  000005                                  RESET
011114  010314                                  MOV     DRIVE,@TACS             ;SELECT DRIVE
011116  112714  000017                          MOVB    #REWIND!GO,@TACS
011122  104412                                  WAITREADY
                                        .SBTTL  END OF PASS ROUTINE

                                        ;;*****************************************************************
                                        ;*INCREMENT THE PASS NUMBER ($PASS)
                                        ;*TYPE "END PASS"
                                        ;*IF THERES A MONITOR GO TO IT
                                        ;*IF THERE ISN'T JUMP TO START
                                        ;*IF IT IS DESIRED TO HAVE A BELL INDICATE THE "END OF PASS" LOCATION
                                        ;*$ENDMG CAN BE CHANGED TO 7.

011124                                  $EOP:
011124  000004                                  SCOPE
011126  005067  167750                          CLR     $TSTNM          ;;ZERO THE TEST NUMBER
011132  005067  170030                          CLR     $TIMES          ;;ZERO THE NUMBER OF ITERATIONS
011136  005267  167736                          INC     $PASS           ;;INCREMENT THE PASS NUMBER
011142  042767  100000  167730                  BIC     #100000,$PASS   ;;DON'T ALLOW A NEG. NUMBER
011150  005327                                  DEC     (PC)+           ;;LOOP?
011152  000001                          $EOPCT: .WORD   1
011154  003015                                  BGT     $DOAGN          ;;YES
011156  012737                                  MOV     (PC)+,@(PC)+    ;;RESTORE COUNTER
011160  000001                          $ENDCT: .WORD   1
011162  011152                                  $EOPCT
011164  104401  011217                          TYPE    ,$ENDMG         ;;TYPE "END PASS"
011170  013700  000042                  $GET42: MOV     @#42,R0         ;;GET MONITOR ADDRESS
011174  001405                                  BEQ     $DOAGN          ;;BRANCH IF NO MONITOR
011176  000005                                  RESET                   ;;CLEAR THE WORLD
011200  004710                          $ENDAD: JSR     PC,(R0)         ;;GO TO MONITOR
011202  000240                                  NOP                     ;;SAVE ROOM
011204  000240                                  NOP                     ;;FOR
011206  000240                                  NOP                     ;;ACT11
011210                                  $DOAGN:
011210  000137                                  JMP     @(PC)+          ;;RETURN
011212  002234                          $RTNAD: .WORD   START
011214     377     377     000         $ENULL: .BYTE   -1,-1,0         ;;NULL CHARACTER STRING
011217     015  042412  042116         $ENDMG: .ASCIZ  <15><12>/END PASS/
011224  050040  051501  000123
```

```
                                        .SBTTL  SCOPE HANDLER ROUTINE

                                        ;;**********************************************************************
                                        ;*THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
                                        ;*AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
                                        ;*AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
                                        ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
                                        ;*SW14=1         LOOP ON TEST
                                        ;*SW11=1         INHIBIT ITERATIONS
                                        ;*SW09=1         LOOP ON ERROR
                                        ;*SW08=1         LOOP ON TEST IN SWR<7:0>
                                        ;*CALL
                                        ;*      SCOPE           ;;SCOPE=IOT

011232                                  $SCOPE:
011232  104406                                 CKSWR                   ;;TEST  FOR CHANGE IN SOFT-SWR
011234  032777  040000  167676          1$:     BIT     #BIT14,@SWR     ;;LOOP ON PRESENT TEST?
011242  001111                                  BNE     $OVER           ;;YES IF SW14=1
                                        ;*****START OF CODE FOR THE XOR TESTER*****
011244  000416                          $XTSTR: BR      6$              ;;IF RUNNING ON THE "XOR" TESTER CHANGE
                                                                        ;;THIS INSTRUCTION TO A "NOP" (NOP=240)
011246  013746  000004                          MOV     @#ERRVEC,-(SP)  ;;SAVE THE CONTENTS OF THE ERROR VECTOR
011252  012737  011272  000004                  MOV     #5$,@#ERRVEC    ;;SET FOR TIMEOUT
011260  005737  177060                          TST     @#177060        ;;TIME OUT ON XOR?
011264  012637  000004                          MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
011270  000463                                  BR      $SVLAD          ;;GO TO THE NEXT TEST
011272  022626                          5$:     CMP     (SP)+,(SP)+     ;;CLEAR THE STACK AFTER A TIME OUT
011274  012637  000004                          MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
011300  000423                                  BR      7$              ;;LOOP ON THE PRESENT TEST
011302                                  6$:;*****END OF CODE FOR THE XOR TESTER*****
011302  032777  000400  167630                  BIT     #BIT08,@SWR     ;;LOOP ON SPEC. TEST?
011310  001404                                  BEQ     2$              ;;BR IF NO
011312  127767  167622  167562                  CMPB    @SWR,$TSTNM     ;;ON THE RIGHT TEST?    SWR<7:0>
011320  001462                                  BEQ     $OVER           ;;BR IF YES
011322  105767  167555                  2$:     TSTB    $ERFLG          ;;HAS AN ERROR OCCURRED?
011326  001421                                  BEQ     3$              ;;BR IF NO
011330  126767  167561  167545                  CMPB    $ERMAX,$ERFLG   ;;MAX. ERRORS FOR THIS TEST OCCURRED?
011336  101015                                  BHI     3$              ;;BR IF NO
011340  032777  001000  167572                  BIT     #BIT09,@SWR     ;;LOOP ON ERROR?
011346  001404                                  BEQ     4$              ;;BR IF NO
011350  016767  167534  167530          7$:     MOV     $LPERR,$LPADR   ;;SET LOOP ADDRESS TO LAST SCOPE
011356  000443                                  BR      $OVER
011360  105067  167517                  4$:     CLRB    $ERFLG          ;;ZERO THE ERROR FLAG
011364  005067  167576                          CLR     $TIMES          ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
011370  000415                                  BR      1$              ;;ESCAPE TO THE NEXT TEST
011372  032777  004000  167540          3$:     BIT     #BIT11,@SWR     ;;INHIBIT ITERATIONS?
011400  001011                                  BNE     1$              ;;BR IF YES
011402  005767  167472                          TST     $PASS           ;;IF FIRST PASS OF PROGRAM
011406  001406                                  BEQ     1$              ;;      INHIBIT ITERATIONS
011410  005267  167470                          INC     $ICNT           ;;INCREMENT ITERATION COUNT
011414  026767  167546  167462                  CMP     $TIMES,$ICNT    ;;CHECK THE NUMBER OF ITERATIONS MADE
011422  002021                                  BGE     $OVER           ;;BR IF MORE ITERATION REQUIRED
011424  012767  000001  167452          1$:     MOV     #1,$ICNT        ;;REINITIALIZE THE ITERATION COUNTER
011432  016767  000044  167526                  MOV     $MXCNT,$TIMES   ;;SET NUMBER OF ITERATIONS TO DO
011440  105267  167436                  $SVLAD: INCB    $TSTNM          ;;COUNT TEST NUMBERS
011444  011667  167436                          MOV     (SP),$LPADR     ;;SAVE SCOPE LOOP ADDRESS
```

```
 2801  011450  011667  167434                    MOV     (SP),$LPERR     ;;SAVE ERROR LOOP ADDRESS
 2802  011454  005067  167510                    CLR     $ESCAPE         ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
 2803  011460  112767  000001  167427            MOVB    #1,$ERMAX       ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
 2804  011466  016777  167410  167446  $OVER:    MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER
 2805  011474  016716  167406                    MOV     $LPADR,(SP)     ;;FUDGE RETURN ADDRESS
 2806  011500  000002                            RTI                     ;;FIXES PS
 2807  011502  003720                  $MXCNT:   2000.                   ;;MAX. NUMBER OF ITERATIONS
```

```
                                        .SBTTL  ERROR HANDLER ROUTINE
                                        ;;*****************************************************************
                                        ;*THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT,
                                        ;*SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
                                        ;*AND GO TO TYPERR ON ERROR
                                        ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
                                        ;*SW15=1         HALT ON ERROR
                                        ;*SW13=1         INHIBIT ERROR TYPEOUTS
                                        ;*SW10=1         BELL ON ERROR
                                        ;*SW09=1         LOOP ON ERROR
                                        ;*CALL
                                        ;*      ERROR   N       ;;ERROR=EMT AND N=ERROR ITEM NUMBER

011504                                  $ERROR:
011504  104406                                 CKSWR                           ;;TEST FOR CHANGE IN SOFT-SWR
011506  011437  001162                         MOV     @TACS,@#$REG0                   ;SAVE THE STATUS REG.
011512  011537  001164                         MOV     @TADB,@#$REG1                   ;SAVE THE DATA BUFFER
011516  010037  001124          ERROR1: MOV     R0,@#$GDDAT                     ;R0 WILL CONTAIN THE GOOD DATA
011522  010137  001126                         MOV     R1,@#$BDDAT                     ;R1 WILL CONTAIN THE BAD DATA
011526  105267  167351          7$:     INCB    $ERFLG                  ;;SET THE ERROR FLAG
011532  001775                         BEQ     7$                      ;;DON'T LET THE FLAG GO TO ZERO
011534  016777  167342  167400         MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
011542  032777  002000  167370         BIT     #BIT10,@SWR             ;;BELL ON ERROR?
011550  001402                         BEQ     1$                      ;;NO - SKIP
011552  104401  001172                 TYPE    ,$BELL                  ;;RING BELL
011556  005267  167330          1$:     INC     $ERTTL                  ;;COUNT THE NUMBER OF ERRORS
011562  011667  167330                 MOV     (SP),$ERRPC             ;;GET ADDRESS OF ERROR INSTRUCTION
011566  162767  000002  167322         SUB     #2,$ERRPC
011574  117767  167316  167312         MOVB    @$ERRPC,$ITEMB  ;;STRIP AND SAVE THE ERROR ITEM CODE
011602  032777  020000  167330         BIT     #BIT13,@SWR             ;;SKIP TYPEOUT IF SET
011610  001004                         BNE     20$                     ;;SKIP TYPEOUTS
011612  004767  000060                 JSR     PC,TYPERR               ;;GO TO USER ERROR ROUTINE
011616  104401  001177                 TYPE    ,$CRLF
011622                                  20$:
011622  005777  167312          2$:     TST     @SWR                    ;;HALT ON ERROR
011626  100002                         BPL     3$                      ;;SKIP IF CONTINUE
011630  000000                         HALT                            ;;HALT ON ERROR!
011632  104406                         CKSWR                           ;;TEST FOR CHANGE IN SOFT-SWR
011634  032777  001000  167276  3$:     BIT     #BIT09,@SWR             ;;LOOP ON ERROR SWITCH SET?
011642  001402                         BEQ     4$                      ;;BR IF NO
011644  016716  167240                 MOV     $LPERR,(SP)             ;;FUDGE RETURN FOR LOOPING
011650  005767  167314          4$:     TST     $ESCAPE                 ;;CHECK FOR AN ESCAPE ADDRESS
011654  001402                         BEQ     5$                      ;;BR IF NONE
011656  016716  167306                 MOV     $ESCAPE,(SP)            ;;FUDGE RETURN ADDRESS FOR ESCAPE
011662                                  5$:
011662  022737  011200  000042         CMP     #$ENDAD,@#42    ;;ACT-11 AUTO-ACCEPT?
011670  001001                         BNE     6$                      ;;BRANCH IF NO
011672  000000                         HALT                            ;;YES
011674                                  6$:
011674  000002                         RTI                             ;;RETURN
```

```
2860                                    ;;*****************************************************************
2861                                    ;THIS ROUTINE WILL TYPEOUT THE ERROR MESSAGES
2862
2863  011676  104401  001177   TYPERR: TYPE    ,$CRLF                  ;TYPE A CARRIAGE RETURN & LINE FEED
2864  011702  010046                   MOV     R0,-(SP)                ;SAVE R0
2865  011704  113700  001114           MOVB    @#$ITEMB,R0             ;PICKUP THE ITEM INDEX
2866  011710  005300                   DEC     R0                      ;ADJUST THE INDEX
2867  011712  006300                   ASL     R0                      ;SO IT WILL WORK FOR
2868  011714  006300                   ASL     R0                      ;THE ERROR TABLE
2869  011716  006300                   ASL     R0
2870  011720  062700  001236           ADD     #$ERRTB,R0              ;FORM THE TABLE POINTER
2871  011724  012067  000002           MOV     (R0)+,1$                ;PICKUP "ERROR MESSAGE" POINTER
2872  011730  104401                   TYPE                            ;TYPE "ERROR MESSAGE"
2873  011732  000000           1$:     0                               ;"ERROR MESSAGE POINTER" GOES HERE
2874  011734  104401  001177           TYPE    ,$CRLF
2875  011740  012067  000004           MOV     (R0)+,2$                ;PICKUP "DATA HEADER" POINTER
2876  011744  001404                   BEQ     3$                      ;IF "0" DON'T TYPE
2877  011746  104401                   TYPE                            ;TYPE "DATA HEADER
2878  011750  000000           2$:     0                               ;"DATA HEADER" POINTER GOES HERE
2879  011752  104401  001177           TYPE    ,$CRLF
2880  011756  012000           3$:     MOV     (R0)+,R0                ;PICKUP "DATA POINTER"
2881  011760  001004                   BNE     5$                      ;IF THERE IS DATA TO TYPE GO DO IT
2882  011762  012600           4$:     MOV     (SP)+,R0                ;RESTORE R0
2883  011764  104401  001177           TYPE    ,$CRLF                  ;TYPE A CARRAGE RETURN&LINE FEED
2884  011770  000207                   RTS     PC                      ;RETURN
2885  011772                   5$:
2886  011772  013046                   MOV     @(R0)+,-(SP)    ;;SAVE @(R0)+ FOR TYPEOUT
2887                                                           ;;TYPE DATA
2888  011774  104402                   TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
2889  011776  005710                   TST     (R0)                    ;TERMINATOR?
2890  012000  001770                   BEQ     4$                      ;BR IF YES
2891  012002  104401  012010           TYPE    ,6$                     ;TYPE 2 SPACES
2892  012006  000771                   BR      5$                      ;LOOP
2893  012010  020040     000    6$:     .ASCIZ  /  /                    ;ASCII STRING OF 2 SPACES
2894          012014                   .EVEN
```

```
2895                                    ;;*****************************************************************
2896                                    ;ROUTINE TO WAIT ON THE READY BIT
2897
2898  012014                            WAIT.ON.READY:
2899  012014  005067  000044                   CLR     WAIT2                   ;SETUP MAX. TIME TO WAIT ON "READY"
2900  012020  016767  000072  000044           MOV     MAXCNT,HGHTIM
2901  012026  012637  001202                   MOV     (SP)+,@#SAVPC           ;GET THE PC OF THE WAITREADY INSTRUCTION
2902  012032  162737  000002  001202           SUB     #2,@#SAVPC
2903  012040  012637  001204                   MOV     (SP)+,@#SAVPS           ;SAVE THE PS
2904  012044  032714  000040           WAIT1:  BIT     #READY,@TACS            ;READY=1?
2905  012050  001013                           BNE     WAIT3                   ;GO ON IF YES
2906  012052  105714                           TSTB    @TACS                   ;CHECK TRANSFER REQUEST
2907  012054  100002                           BPL     WAIT4
2908  012056  104004                           ERROR   4                       ;"TRANSFER REQUEST" SET WHILE WAITING ON "READY"
2909  012060  000407                           BR      WAIT3
2910  012062  005227                   WAIT4:  INC     (PC)+                   ;COUNT FAST COUNTER
2911  012064  000000                   WAIT2:  0
2912  012066  001366                           BNE     WAIT1                   ;GO CHECK "READY" AGAIN
2913  012070  005327                           DEC     (PC)+                   ;COUNT LOOP COUNTER
2914  012072  000000                   HGHTIM: 0
2915  012074  003363                           BGT     WAIT1                   ;GO LOOP AGAIN
2916  012076  104002                           ERROR   2                       ;"READY" FAILED TO SET
2917  012100  013746  001204           WAIT3:  MOV     @#SAVPS,-(SP)           ;GET THE STATUS BACK
2918  012104  013746  001202                   MOV     @#SAVPC,-(SP)           ;GET THE PC
2919  012110  062716  000002                   ADD     #2,(SP)
2920  012114  000002                           RTI
2921  012116  000000                   MAXCNT: 0
2922
2923                                    ;;*****************************************************************
2924                                    ;ROUTINE TO WAIT ON TRANSFER REQUEST
2925
2926  012120                            WAIT.FOR.XFER.REQ:
2927  012120  005067  000044                   CLR     2$                      ;SETUP WASTE TIME LOOP
2928  012124  013767  012116  000044           MOV     @#MAXCNT,3$
2929  012132  012637  001202                   MOV     (SP)+,@#SAVPC           ;GET THE PC OF THE WAITXFER INSTRUCTION
2930  012136  162737  000002  001202           SUB     #2,@#SAVPC
2931  012144  012637  001204                   MOV     (SP)+,@#SAVPS           ;SAVE THE PS
2932  012150  105714                   1$:     TSTB    @TACS                   ;CHECK XFER REQ
2933  012152  100414                           BMI     4$                      ;EXIT IF SET
2934  012154  032714  000040                   BIT     #READY,@TACS            ;LOOK AT READY
2935  012160  001402                           BEQ     5$                      ;BR IF "READY" ISN'T SET
2936  012162  104004                           ERROR   4                       ;"READY" SET WHILE WAITING FOR "XFER REQ"
2937  012164  000407                           BR      4$
2938  012166  005227                   5$:     INC     (PC)+                   ;COUNT
2939  012170  000000                   2$:     0
2940  012172  001366                           BNE     1$                      ;BR IF MORE TO DO
2941  012174  005327                           DEC     (PC)+
2942  012176  000000                   3$:     0
2943  012200  003363                           BGT     1$
2944  012202  104003                           ERROR   3                       ;"TRANSFER REQUEST" FAILED TO SET
2945  012204  013746  001204           4$:     MOV     @#SAVPS,-(SP)           ;GET THE STATUS BACK
2946  012210  013746  001202                   MOV     @#SAVPC,-(SP)           ;GET THE PC
2947  012214  062716  000002                   ADD     #2,(SP)
2948  012220  000002                           RTI                             ;GO BACK
```

```
2949                                    ;;*****************************************************************
2950
2951                                    .SBTTL          ROUTINE TO ASK THE OPERATOR WHAT DRIVE(S) TO TEST
2952
2953                                    ;CALL
2954                                    ;       JSR     PC,@#ASKDRV
2955                                    ;       RETURN                  ;NOTE: R0 AND R1 ARE DESTROYED
2956
2957  012222  104401  015570  ASKDRV:   TYPE    ,MSGDRV                 ;<CRLF>"DRIVE(S)? "
2958  012226  005067  166772            CLR     DRVKEY
2959  012232  104410                    RDLIN                           ;GO GET A DRIVE
2960  012234  012600                    MOV     (SP)+,R0                ;SETUP TO CHECK FOR VALID DRIVE(S)
2961  012236  105710                    TSTB    @R0                     ;WAS A DRIVE SELECTED?
2962  012240  001425                    BEQ     NOTLGL                  ;BR IF NO
2963  012242  012701  001224            MOV     #DRVKEY,R1
2964  012246  122710  000101  LOOP:     CMPB    #'A,@R0                 ;WAS DRIVE "A" SELECTED?
2965  012252  001002                    BNE     NOTA                    ;BR IF NO
2966  012254  112021                    MOVB    (R0)+,(R1)+             ;SET KEY FOR DRIVE "A"
2967  012256  000411                    BR      NEXT
2968  012260  122710  000102  NOTA:     CMPB    #'B,@R0                 ;WAS DRIVE "B" SELECTED?
2969  012264  001002                    BNE     NOTB                    ;BR IF NO
2970  012266  112021                    MOVB    (R0)+,(R1)+             ;SET KEY FOR DRIVE "B"
2971  012270  000404                    BR      NEXT
2972  012272  122710  000054  NOTB:     CMPB    #54,@R0                 ;WAS A COMMA TYPED?
2973  012276  001006                    BNE     NOTLGL                  ;BR IF NO
2974  012300  105720                    TSTB    (R0)+                   ;DUMP THE COMMA
2975  012302  105710          NEXT:     TSTB    @R0                     ;TERMINATOR?
2976  012304  001406                    BEQ     EXIT                    ;BR IF YES
2977  012306  022701  001226            CMP     #DRVKEY+2,R1            ;TWO DRIVES SELECTED?
2978  012312  101355                    BHI     LOOP                    ;BR IF NO
2979  012314  104401  001176  NOTLGL:   TYPE    ,$QUES                  ;ILLEGAL INPUT DETECTED
2980  012320  000740                    BR      ASKDRV                  ;GO TRY AGAIN
2981  012322  005767  166676  EXIT:     TST     DRVKEY                  ;ANY DRIVE SELECTED?
2982  012326  001772                    BEQ     NOTLGL                  ;BR IF NO
2983  012330  000207                    RTS     PC
2984
```

```
2985                                    ;;*****************************************************************
2986                                    .SBTTL  ROUTINE TO I".PUT CSR,DBR, AND VECTOR ADDRESS AND FRIORITY
2987                                    ;CALL
2988                                    ;JSR    PC,@#ASKADR
2989
2990  012332  010046                    ASKADR: MOV     R0,-(SP)                ;SAVE R0
2991  012334  104401  015603            1$:     TYPE    ,MSGASK                 ;"TACS?"
2992  012340  104411                            RDOCT                           ;GET VALUE
2993  012342  012600                            MOV     (SP)+,R0                ;PICK UP THE OCTAL NUMBER
2994  012344  001423                            BEQ     3$                      ;IF "0" USE OLD VALUES
2995  012346  020027  160000                    CMP     R0,#160000              ;MAKE SURE IT IS A BUS ADDRESS
2996  012352  103770                            BLO     1$
2997  012354  010037  001206                    MOV     R0,@#TACSL              ;SAVE TOE TACS
2998  012360  062700  000002                    ADD     #2,R0                   ;STEP TO TADB ADDRESS
2999  012364  010037  001212                    MOV     R0,@#TADBL              ;AND SAVE IT
3000  012370  013737  001206  001210            MOV     @#TACSL,@#TACSH         ;SETUP TACS UPPER
3001  012376  005237  001210                    INC     @#TACSH                 ;BYTE POINTER
3002
3003  012402  013737  001212  001214            MOV     @#TADBL,@#TADBH         ;SETUP TADB UPPER
3004  012410  005237  001214                    INC             @#TADBH                 ;BYTE POINTER
3005  012414  104401  015613            3$:     TYPE    ,MSGVEC                 ;"VECTOR?"
3006  012420  104411                            RDOCT
3007  012422  012600                            MOV     (SP)+,R0
3008  012424  001411                            BEQ     5$
3009  012426  020027  001000                    CMP     R0,#1000                ;MAKE SURE ADDRESS IS IN VECTOR AREA
3010  012432  103370                            BHIS    3$
3011  012434  010037  001216                    MOV     R0,@#TAVEC              ;SAVE AS VECTOR ADDRESS
3012  012440  062700  000002                    ADD     #2,R0
3013  012444  010037  001220                    MOV     R0,@#TAVEC+2
3014  012450  104401  015623            5$:     TYPE    ,MSGPRI                 ;ASK FOR PRIORITY
3015  012454  104411                            RDOCT
3016  012456  012600                            MOV     (SP)+,R0
3017  012460  001413                            BEQ     6$                      ;IF "0" USE OLD VALUE
3018  012462  020027  000007                    CMP     R0,#7                   ;MAKE SURE ITS VALID
3019  012466  101370                            BHI     5$
3020  012470  000300                            SWAB    R0                      ;PUT INTO HIGH BYTE
3021  012472  006200                            ASR     R0                      ;AND SHIFT
3022  012474  006200                            ASR     R0                      ;INTO PROPER
3023  012476  006200                            ASR     R0                      ;POSITION
3024  012500  042700  177437                    BIC     #^C<340>,R0             ;SAVE ONLY PRIORITY BITS
3025  012504  010037  001222                    MOV     R0,@#TAPRIO             ;STORE IT AWAY
3026  012510  104401  015635            6$:     TYPE    ,MTACS                  ;TACS="
3027  012514  016746  166466                    MOV     TACSL,-(SP)     ;;SAVE TACSL FOR TYPEOUT
3028  012520  104402                            TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3029  012522  104401  015643                    TYPE    ,MTADB                  ;"TADB="
3030  012526  016746  166460                    MOV     TADBL,-(SP)     ;;SAVE TADBL FOR TYPEOUT
3031  012532  104402                            TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3032  012534  104401  015652                    TYPE    ,MTAVEC                 ;"VECTOR="
3033  012540  016746  166452                    MOV     TAVEC,-(SP)     ;;SAVE TAVEC FOR TYPEOUT
3034  012544  104402                            TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3035  012546  104401  015663                    TYPE    ,MTAPRI                 ;"PRIORITY="
3036  012552  016746  166444                    MOV     TAPRIO,-(SP)    ;;SAVE TAPRIO FOR TYPEOUT
3037  012556  104402                            TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3038  012560  104401  015676                    TYPE    ,MSGOK                  ;"OK?"
3039  012564  104407                            RDCHR                           ;GO READ ONE CHARACTER
3040  012566  012600                            MOV     (SP)+,R0                ;GET IT
```

```
 3041  012570  022700  000015            CMP     #15,R0          ;IS IT "CR"?
 3042  012574  001406                    BEQ     7$              ;BRANCH IF YES
 3043  012576  022700  000131            CMP     #'Y,R0          ;IS IT "Y"?
 3044  012602  001403                    BEQ     7$              ;IT WAS
 3045  012604  104401  001176            TYPE    ,$QUES          ;TYPE "?"
 3046  012610  000651                    BR      1$              ;AND LET HIM CORRECT THEM
 3047  012612  104401  015704    7$:     TYPE    ,MYES           ;TYPE OUT "YES"
 3048  012616  012600                    MOV     (SP)+,R0        ;RESTORE R0
 3049  012620  000207                    RTS     PC              ;AND RETURN
```

```
3050                                    ;////////////////////////////////////////////////////////////////////////
3051                                    ;////////////////////////////////////////////////////////////////////////
3052                                    ;THE FOLLOWING ROUTINES CAN BE USED TO MAKE ADJUSTMENTS TO THE TU60
3053                                    ;NOTE:  *** BEFORE USING ANY OF THE ROUTINES LOAD AND START AT 214 ***
3054                                    ;////////////////////////////////////////////////////////////////////////
3055
3056
3057
3058                                    ;;*****************************************************************
3059                                    ;       WRITE FILE GAPS FROM "BOT" TO "EOT"
3060                                            ;START AT 220
3061                                            ;THIS ROUTINE CAN BE USED TO ADJUST THE "WRITE GAP MONO" AND
3062                                            ;THE "WRITE DELAY MONO".
3063                                    ;;*****************************************************************
3064  012622  012706  001100            WFGSUB: MOV     #STACK,SP               ;KEEP THE STACK OUT OF THE WAY
3065  012626  013704  001206                    MOV     @#TACSL,TACS            ;SETUP THE TA11 STATUS AND
3066  012632  013705  001212                    MOV     @#TADBL,TADB            ;DATA BUFFER REGISTERS
3067  012636  000005                            RESET                           ;RESET THE WORLD
3068  012640  012737  012622  001110            MOV     #WFGSUB,@#$LPERR                ;SETUP THE LOOP ON ERROR ADDRESS
3069  012646  004737  013626                    JSR     PC,@#NXTDRV             ;GO SETUP FOR NEXT DRIVE
3070  012652  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
3071  012654  112714  000017                    MOVB    #REWIND!GO,@TACS        ;SEND TAPE TO "BOT"
3072  012660  032714  000040            100$:   BIT     #READY,@TACS            ;WAIT ON READY
3073  012664  001775                            BEQ     100$
3074  012666  112714  000001            1$:     MOVB    #WFG!GO,@TACS           ;WRITE A FILE GAP
3075  012672  104412                            WAITREADY                       ;WAIT ON READY
3076  012674  032714  020000                    BIT     #LEADER,@TACS           ;AT "CLEAR LEADER"?
3077  012700  001772                            BEQ     1$                      ;BR IF NO
3078  012702  000000                            HALT                            ;STOP IF YES
3079  012704  000746                            BR      WFGSUB                  ;LOOP ON CONT.
3080
3081
3082                                    ;;*****************************************************************
3083                                    ;       WRITE CONTINUOUS BLOCKS OF DATA
3084                                            ;START AT 224
3085                                            ;THE PROGRAM WILL HALT THREE(3) TIMES
3086                                            ;AFTER EACH HALT SET THE SWR AND PRESS CONTINUE
3087                                            ;****  IF USING SOFTWARE SWITCH REGISTER
3088                                            ;       PRESS CONTINUE   AND
3089                                            ;      PROGRAM WILL TYPE "SWR=XXXXXX NEW="
3090                                            ;       AND ALLOW A NEW VALUE TO BE INPUT
3091                                            ;HALT 1 --- SWR<7:0> = NUMBER OF BYTES PER BLOCK
3092                                            ;HALT 2 --- SWR<7:0> = PATTERN DESIRED
3093                                            ;HALT 3 --- SWR<15:0> = OPERATIONAL SWITCH SETTINGS
3094                                            ;THIS ROUTINE CAN BE USED TO ADJUST THE "GAP TIME MONO"
3095                                    ;;*****************************************************************
3096  012706  004737  013370            WRTSUB: JSR     PC,@#SETBUF             ;GET BLOCK SIZE AND PATTERN
3097  012712  012706  001100            WLOOP:  MOV     #STACK,SP               ;KEEP THE STACK OUT OF THE WAY
3098  012716  013704  001206                    MOV     @#TACSL,TACS            ;SETUP THE TA11 STATUS AND
3099  012722  013705  001212                    MOV     @#TADBL,TADB            ;DATA BUFFER REGISTERS
3100  012726  000005                            RESET                           ;RESET THE WORLD
3101  012730  012737  012712  001110            MOV     #WLOOP,@#$LPERR         ;SETUP THE LOOP ON ERROR ADDRESS
3102  012736  004737  013626                    JSR     PC,@#NXTDRV             ;GO SETUP FOR NEXT DRIVE
3103  012742  010314                            MOV     DRIVE,@TACS             ;SELECT DRIVE
3104  012744  112714  000017                    MOVB    #REWIND!GO,@TACS        ;SEND TAPE TO "BOT"
3105  012750  032714  000040            100$:   BIT     #READY,@TACS            ;WAIT ON READY
```

```
3106  012754  001775                        BEQ     100$
3107  012756  004737  013504        1$:     JSR     PC,@#WRTBLK             ;WRITE A BLOCK
3108  012762  032714  020000                BIT     #LEADER,@TACS           ;AT "CLEAR LEADER"?
3109  012766  001773                        BEQ     1$                      ;BR IF NO
3110  012770  000000                        HALT                            ;STOP IF "EOT"
3111  012772  000747                        BR      WLOOP                   ;LOOP IF CONT.
3112
3113
3114                                ;;**************************************************************
3115                                ;       READ CONTINUOUS BLOCKS OF DATA
3116                                        ;START AT 230
3117                                        ;THIS ROUTINE CAN BE USED TO ADJUST THE "SIGNAL MONO"
3118                                        ;AND THE "THRESHOLD POT".
3119                                ;;**************************************************************
3120  012774  012706  001100        RDSUB:  MOV     #STACK,SP               ;KEEP THE STACK OUT OF THE WAY
3121  013000  013704  001206                MOV     @#TACSL,TACS            ;SETUP THE TA11 STATUS AND
3122  013004  013705  001212                MOV     @#TADBL,TADB            ;DATA BUFFER REGISTERS
3123  013010  000005                        RESET                           ;RESET THE WORLD
3124  013012  012737  012774  001110        MOV     #RDSUB,@#$LPERR         ;SETUP THE LOOP ON ERROR ADDRESS
3125  013020  004737  013626                JSR     PC,@#NXTDRV             ;GO SETUP FOR NEXT DRIVE
3126  013024  010314                        MOV     DRIVE,@TACS             ;SELECT DRIVE
3127  013026  112714  000017                MOVB    #REWIND!GO,@TACS        ;SEND TAPE TO "BOT"
3128  013032  032714  000040        100$:   BIT     #READY,@TACS            ;WAIT ON READY
3129  013036  001775                        BEQ     100$
3130  013040  004737  013546        1$:     JSR     PC,@#RDBLK              ;READ A BLOCK
3131  013044  032714  020000                BIT     #LEADER,@TACS           ;AT "CLEAR LEADER"?
3132  013050  001351                        BNE     RDSUB                   ;BR IF YES---LOOP
3133  013052  000772                        BR      1$
3134
3135
3136                                ;;**************************************************************
3137                                ;       WRITE A FILE GAP AND A BLOCK OF DATA FROM BOT TO EOT
3138                                        ;START AT 234
3139                                        ;THE PROGRAM WILL HALT THREE(3) TIMES
3140                                        ;AFTER EACH HALT SET THE SWR AND PRESS CONTINUE
3141                                        ;****  IF USING SOFTWARE SWITCH REGISTER
3142                                        ;       PRESS CONTINUE   AND
3143                                        ;      PROGRAM WILL TYPE "SWR=XXXXXX NEW="
3144                                        ;       AND ALLOW A NEW VALUE TO BE INPUT
3145                                        ;HALT 1 --- SWR<7:0> = NUMBER OF BYTES PER BLOCK
3146                                        ;HALT 2 --- SWR<7:0> = PATTERN DESIRED
3147                                        ;HALT 3 --- SWR<15:0> = OPERATIONAL SWITCH SETTINGS
3148                                        ;THIS ROUTINE CAN BE USED TO ADJUST THE "WRITE GAP MONO"
3149                                        ;AND THE "GAP TIME MONO".
3150                                ;;**************************************************************
3151  013054  004737  013370        WGPBLK: JSR     PC,@#SETBUF             ;GET BLOCK SIZE AND PATTERN
3152  013060  012706  001100        WGBLOP: MOV     #STACK,SP               ;KEEP THE STACK OUT OF THE WAY
3153  013064  013704  001206                MOV     @#TACSL,TACS            ;SETUP THE TA11 STATUS AND
3154  013070  013705  001212                MOV     @#TADBL,TADB            ;DATA BUFFER REGISTERS
3155  013074  000005                        RESET                           ;RESET THE WORLD
3156  013076  012737  013060  001110        MOV     #WGBLOP,@#$LPERR                ;SETUP THE LOOP ON ERROR ADDRESS
3157  013104  004737  013626                JSR     PC,@#NXTDRV             ;GO SETUP FOR NEXT DRIVE
3158  013110  010314                        MOV     DRIVE,@TACS             ;SELECT DRIVE
3159  013112  112714  000017                MOVB    #REWIND!GO,@TACS        ;SEND TAPE TO "BOT"
3160  013116  032714  000040        100$:   BIT     #READY,@TACS            ;WAIT ON READY
3161  013122  001775                        BEQ     100$
```

```
3162  013124  112714  000001          1$:     MOVB    #WFG!GO,@TACS           ;WRITE A FILE GAP
3163  013130  104412                          WAITREADY                       ;WAIT ON READY
3164  013132  032714  020000                  BIT     #LEADER,@TACS           ;AT "CLEAR LEADER"?
3165  013136  001005                          BNE     2$                      ;BR IF YES
3166  013140  004737  013504                  JSR     PC,@#WRTBLK             ;WRITE A BLOCK
3167  013144  032714  020000                  BIT     #LEADER,@TACS           ;AT "CLEAR LEADER"?
3168  013150  001765                          BEQ     1$                      ;BR IF NO
3169  013152  000000                  2$:     HALT                            ;STOP AT "EOT"
3170  013154  000741                          BR      WGBLOP                  ;START OVER ON CONT.
3171
3172
3173                                  ;;**************************************************************
3174                                  ;       READ A BLOCK OF DATA AND A FILE GAP
3175                                          ;START AT 240
3176                                          ;THIS ROUTINE IS USED AFTER "WRITE A BLOCK AND A FILE GAP" ROUTINE
3177                                          ;IT CAN BE USED TO ADJUST THE "SIGNAL MONO", THE THRESHOLD POT"
3178                                          ;AND THE "TAPE BLANK MONO".
3179                                  ;;**************************************************************
3180  013156  012706  001100          RGPBLK: MOV     #STACK,SP               ;KEEP THE STACK OUT OF THE WAY
3181  013162  013704  001206                  MOV     @#TACSL,TACS            ;SETUP THE TA11 STATUS AND
3182  013166  013705  001212                  MOV     @#TADBL,TADB            ;DATA BUFFER REGISTERS
3183  013172  000005                          RESET                           ;RESET THE WORLD
3184  013174  012737  013156  001110          MOV     #RGPBLK,@#$LPERR                ;SETUP THE LOOP ON ERROR ADDRESS
3185  013202  004737  013626                  JSR     PC,@#NXTDRV             ;GO SETUP FOR NEXT DRIVE
3186  013206  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
3187  013210  112714  000017                  MOVB    #REWIND!GO,@TACS        ;SEND TAPE TO "BOT"
3188  013214  032714  000040          100$:   BIT     #READY,@TACS            ;WAIT ON READY
3189  013220  001775                          BEQ     100$
3190  013222  004737  013546          1$:     JSR     PC,@#RDBLK              ;READ A BLOCK OF DATA
3191  013226  032714  020000                  BIT     #LEADER,@TACS           ;AT "CLEAR LEADER"?
3192  013232  001351                          BNE     RGPBLK                  ;BR IF YES
3193  013234  112714  000015                  MOVB    #SFBG!GO,@TACS          ;GET INTO A FILE GAP
3194  013240  104412                          WAITREADY
3195  013242  032714  020000                  BIT     #LEADER,@TACS           ;AT "CLEAR LEADER"?
3196  013246  001343                          BNE     RGPBLK                  ;BR IF YES
3197  013250  000764                          BR      1$                      ;LOOP
3198
3199
3200                                  ;;**************************************************************
3201                                  ;       SPACE FORWARD FILE GAP FROM "BOT" TO "EOT"
3202                                          ;START AT 244
3203                                          ;THIS ROUTINE CAN BE USED AFTER "WRITE FILE GAP" FOR LOW SPEED
3204                                          ;SPACE FOWARD (TAPE BLANK MONO CAN BE ADJUSTED), OR AFTER READ OR
3205                                          ;WRITE A FILE GAP AND A BLOCK OF DATA FOR HIGH SPEED SPACE FORWARD
3206                                          ;(SIGNAL MONO CAN BE CHECKED).
3207                                  ;;**************************************************************
3208  013252  012706  001100          SFFGSB: MOV     #STACK,SP               ;KEEP THE STACK OUT OF THE WAY
3209  013256  013704  001206                  MOV     @#TACSL,TACS            ;SETUP THE TA11 STATUS AND
3210  013262  013705  001212                  MOV     @#TADBL,TADB            ;DATA BUFFER REGISTERS
3211  013266  000005                          RESET                           ;RESET THE WORLD
3212  013270  012737  013252  001110          MOV     #SFFGSB,@#$LPERR                ;SETUP THE LOOP ON ERROR ADDRESS
3213  013276  004737  013626                  JSR     PC,@#NXTDRV             ;GO SETUP FOR NEXT DRIVE
3214  013302  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
3215  013304  112714  000017                  MOVB    #REWIND!GO,@TACS        ;SEND TAPE TO "BOT"
3216  013310  032714  000040          100$:   BIT     #READY,@TACS            ;WAIT ON READY
3217  013314  001775                          BEQ     100$
```

```
3218  013315  112714  000013          1$:     MOVB    #SFFG!GO,@TACS          ;SPACE INTO A FILE GAP
3219  013322  104412                          WAITREADY                       ;WAIT ON READY
3220  013324  032714  020000                  BIT     #LEADER,@TACS           ;AT "CLEAR LEADER"?
3221  013330  001772                          BEQ     1$                      ;BR IF NO
3222  013332  000000                          HALT                            ;STOP AT "EOT"
3223  013334  000746                          BR      SFFGSB                  ;LOOP ON CONT.
3224
3225
3226                                  ;;*****************************************************************
3227                                  ;       BACK SPACE FILE GAP
3228                                          ;START AT 250
3229                                          ;THIS ROUTINE CAN BE USED TO ADJUST OR CHECK THE "SIGNAL MONO".
3230                                  ;;*****************************************************************
3231  013336  000005                  BSFGSB: RESET                           ;RESET THE WORLD
3232  013340  012737  013336  001110          MOV     #BSFGSB,@#$LPERR                ;LOOP ON ERROR ADDRESS
3233  013346  010314                          MOV     DRIVE,@TACS             ;SELECT DRIVE
3234  013350  112714  000007          1$:     MOVB    #BSFG!GO,@TACS          ;BACK SPACE A FILE GAP
3235  013354  104412                          WAITREADY                       ;WAIT ON READY
3236  013356  032714  020000                  BIT     #LEADER,@TACS           ;AT "CLEAR LEADER"?
3237  013362  001772                          BEQ     1$                      ;BR IF NO
3238  013364  000000                          HALT                            ;STOP AT BOT
3239  013366  000763                          BR      BSFGSB                  ;START OVER ON CONT.
3240
3241
3242                                  ;;*****************************************************************
3243                                  ;       SETUP BLOCK SIZE AND PATTERN FOR SUBROUTINES
3244                                  ;;*****************************************************************
3245  013370  005000                  SETBUF: CLR     R0
3246  013372  000000                          HALT                            ;OPERATOR PUTS BYTE COUNT IN SWR<7:0>
3247  013374  022767  000176  165536          CMP     #SWREG,SWR              ;SOFTWARE SWITCH REG.?
3248  013402  001001                          BNE     20$                     ;NO-LET HIM BE
3249  013404  104405                          GTSWR                           ;GET NEW VALUE
3250  013406                          20$:                                    ;CONTINUE
3251  013406  157700  165526                  BISB    @SWR,R0                 ;PICKUP THE BYTE COUNT
3252  013412  001006                          BNE     2$                      ;BR IF NON-ZERO
3253  013414  105777  165521                  TSTB    @SWR+1                  ;CHECK IF GREATER THAN 377
3254  013420  001402                          BEQ     1$                      ;BR IF NO
3255  013422  012700  000376                  MOV     #376,R0                 ;SET FOR MAX ALLOWED
3256  013426  005200                  1$:     INC     R0                      ;MAKE IT 377 OR 1
3257  013430  010037  013500          2$:     MOV     R0,@#BLKLIM             ;SETUP THE BLOCK LIMIT
3258  013434  005037  013502                  CLR     @#PATTRN
3259  013440  000000                          HALT                            ;OPERATOR PUTS PATTERN IN SWR<7:0>
3260  013442  022767  000176  165470          CMP     #SWREG,SWR              ;SOFTWARE SWITCH REG.?
3261  013450  001001                          BNE     21$                     ;NO-LET HIM BE
3262  013452  104405                          GTSWR                           ;GET NEW VALUE
3263  013454                          21$:                                    ;CONTINUE
3264  013454  117737  165460  013502          MOVB    @SWR,@#PATTRN           ;PICK UP THE PATTERN
3265  013462  000000                          HALT                            ;SET OPERATIONAL SWITCHES
3266  013464  022767  000176  165446          CMP     #SWREG,SWR              ;SOFTWARE SWITCH REG.?
3267  013472  001001                          BNE     22$                     ;NO-LET HIM BE
3268  013474  104405                          GTSWR                           ;GET NEW VALUE
3269  013476                          22$:                                    ;CONTINUE
3270  013476  000207                          RTS     PC                      ;RETURN
3271  013500  000000                  BLKLIM: 0                               ;READ AND WRITE BLOCK SIZE
3272  013502  000000                  PATTRN: 0                               ;PATTERN TO GO ON THE TAPE
3273
```

```
3274
3275                                    ;;*****************************************************************
3276                                    ;       WRITE ROUTINE FOR THE MANUAL OPERATIONS
3277                                    ;*****************************************************************
3278  013504  013701  013500   WRTBLK: MOV     @#BLKLIM,R1             ;PICKUP THE BLOCK SIZE
3279  013510  112714  000003           MOVB    #WRITE!GO,@TACS         ;START A WRITE
3280  013514  104413            1$:     WAITXFER                        ;WAIT ON TRANSFER REQUEST
3281  013516  032714  000040           BIT     #READY,@TACS            ;DID READY SET?
3282  013522  001010                    BNE     3$                      ;BR IF YES
3283  013524  005301                    DEC     R1                      ;COUNT THIS REQUEST
3284  013526  002403                    BLT     2$                      ;BR IF TIME FOR ILBS
3285  013530  113715  013502           MOVB    @#PATTRN,@TADB          ;PUT DATA ON TAPE
3286  013534  000767                    BR      1$                      ;LOOP
3287  013536  052714  000020   2$:     BIS     #ILBS,@TACS             ;WRITE CRC AND SHUT DOWN
3288  013542  104412                    WAITREADY                       ;WAIT ON THE READY FLAG
3289  013544  000207            3$:     RTS     PC
3290
3291
3292                                    ;;*****************************************************************
3293                                    ;       READ ROUTINE FOR THE MANUAL OPERATIONS
3294                                    ;*****************************************************************
3295  013546  013702  013500   RDBLK: MOV     @#BLKLIM,R2             ;PICKUP THE BLOCK SIZE
3296  013552  013700  013502           MOV     @#PATTRN,R0             ;USE THIS DATA PATTERN TO COMPARE TO
3297  013556  112714  000005           MOVB    #READ!GO,@TACS          ;START A READ
3298  013562  104413            1$:     WAITXFER                        ;WAIT ON TRANSFER REQUEST
3299  013564  032714  000040           BIT     #READY,@TACS            ;IS READY SET?
3300  013570  001012                    BNE     3$                      ;BR IF YES
3301  013572  005302                    DEC     R2                      ;COUNT THIS REQUEST
3302  013574  002405                    BLT     2$                      ;BR IF TIME FOR ILBS
3303  013576  011501                    MOV     @TADB,R1                ;READ THE DATA BUFFER
3304  013600  120001                    CMPB    R0,R1                   ;CHECK THE DATA
3305  013602  001767                    BEQ     1$                      ;BR IF OK
3306  013604  104007                    ERROR   7                       ;BAD DATA
3307  013606  000406                    BR      4$                      ;GET OUT
3308  013610  052714  000020   2$:     BIS     #ILBS,@TACS             ;READ ILBS
3309  013614  104412                    WAITREADY                       ;WAIT ON READY
3310  013616  005714            3$:     TST     @TACS                   ;CHECK FOR ERROR
3311  013620  100001                    BPL     4$                      ;BR IF NONE
3312  013622  104001                    ERROR   1                       ;ERROR OCCURRED
3313  013624  000207            4$:     RTS     PC                      ;RETURN
3314
3315
3316                                    ;;*****************************************************************
3317                                    ;       ROUTINE TO CHANGE DRIVES
3318  013626  105777  165306   NXTDRV: TSTB    @SWR                    ;IS SW07 ON A (1)?
3319  013632  100416                    BMI     3$                      ;BR IF YES
3320  013634  005003                    CLR     DRIVE                   ;SET DRIVE TO "A"
3321  013636  013701  001230           MOV     @#DRVPNT,R1             ;GET DRIVE POINTER
3322  013642  122127  000101           CMPB    (R1)+,#'A               ;IS IT DRIVE "A"?
3323  013646  001402                    BEQ     1$                      ;BR IF YES
3324  013650  012703  000400           MOV     #UNIT,DRIVE             ;SET DRIVE TO "B"
3325  013654  105711            1$:     TSTB    (R1)                    ;LAST DRIVE BEEN SELECTED
3326  013656  001002                    BNE     2$                      ;BR IF NO
3327  013660  012701  001224           MOV     #DRVKEY,R1              ;RESET DRIVE POINTER
3328  013664  010137  001230   2$:     MOV     R1,@#DRVPNT             ;SAVE DRIVE POINTER FOR NEXT TIME
3329  013670  000207            3$:     RTS     PC                      ;GO BACK
```

```
3330                                    ;;******************************************************************
3331                                    ;
3332                                    .SBTTL          ROUTINE TO EXAMINE DRIVE(S) FOR AVAILABLITY
3333
3334                                    ;CALL:
3335                                    ;       MOV     #DRVKEY,R0
3336                                    ;       JSR     PC,@#EXAM               ;R1 IS DESTROYED
3337                                    ;       NORMAL RETURN
3338                                    ;       ERROR RETURN
3339
3340  013672  013701  001206        EXAM:   MOV     @#TACSL,R1              ;PICKUP THE "CONTROL & STATUS" REG. ADR.
3341  013676  005011                        CLR     (R1)                    ;DRIVE="A", FUNCTION="WFG"
3342  013700  122710  000101                CMPB    #'A,(R0)                ;EXAMINE DRIVE "A"?
3343  013704  001402                        BEQ     1$                      ;BR IF YES
3344  013706  052711  000400                BIS     #UNIT,(R1)              ;SELECT DRIVE "B"
3345  013712  032711  000040        1$:     BIT     #READY,(R1)             ;WAIT ON READY
3346  013716  001775                        BEQ     1$
3347  013720  005711                        TST     (R1)                    ;ANY ERROR?
3348  013722  100024                        BPL     4$                      ;BR IF NO
3349  013724  032711  001000                BIT     #OFFLINE,(R1)           ;ERROR DUE TO "OFF LINE"?
3350  013730  001017                        BNE     3$                      ;BR IF YES
3351  013732  032711  010000                BIT     #WRTLOCK,(R1)           ;ERROR DUE TO "WRITE LOCK"?
3352  013736  001411                        BEQ     2$                      ;BR IF NO
3353  013740  122777  000201  165172        CMPB    #BIT07!BIT00,@SWR       ;"READONLY" SELECTED? (RD1PAS)
3354  013746  001412                        BEQ     4$                      ;BR IF YES
3355  013750  122777  000203  165162        CMPB    #BIT07!BIT01!BIT00,@SWR ;(RD2PAS)?
3356  013756  001406                        BEQ     4$                      ;BR IF YES
3357  013760  000403                        BR      3$                      ;TAKE THE ERROR EXIT
3358  013762  032711  020000        2$:     BIT     #LEADER,(R1)            ;ERROR DUE TO "CLEAR LEADER"?
3359  013766  001002                        BNE     4$                      ;BR IF YES
3360  013770  062716  000002        3$:     ADD     #2,(SP)                 ;TAKE ERROR RETURN
3361  013774  000207                4$:     RTS     PC                      ;RETURN
```

```
                                        .SBTTL  TYPE ROUTINE

                                        ;;**************************************************************
                                        ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
                                        ;*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
                                        ;*NOTE1:         $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
                                        ;*NOTE2:         $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
                                        ;*NOTE3:         $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
                                        ;*
                                        ;*CALL:
                                        ;*1) USING A TRAP INSTRUCTION
                                        ;*       TYPE    ,MESADR         ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRI
                                        ;*OR
                                        ;*       TYPE
                                        ;*       MESADR
                                        ;*

013776  105767  165155          $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
014002  100002                         BPL     1$              ;;BR IF YES
014004  000000                         HALT                    ;;HALT HERE IF NO TERMINAL
014006  000407                         BR      3$              ;;LEAVE
014010  010046                  1$:    MOV     R0,-(SP)        ;;SAVE R0
014012  017600  000002                 MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ S
014016  112046                  2$:    MOVB    (R0)+,-(SP)     ;;PUSH CHARACTER TO BE TYPED ONTO STACK
014020  001005                         BNE     4$              ;;BR IF IT ISN'T THE TERMINATOR
014022  005726                         TST     (SP)+           ;;IF TERMINATOR POP IT OFF THE STACK
014024  012600                  60$:   MOV     (SP)+,R0        ;;RESTORE R0
014026  062716  000002          3$:    ADD     #2,(SP)         ;;ADJUST RETURN PC
014032  000002                         RTI                     ;;RETURN
014034  122716  000011          4$:    CMPB    #HT,(SP)        ;;BRANCH IF <HT>
014040  001430                         BEQ     8$
014042  122716  000200                 CMPB    #CRLF,(SP)      ;;BRANCH IF NOT <CRLF>
014046  001006                         BNE     5$
014050  005726                         TST     (SP)+           ;;POP  <CR><LF> EQUIV
014052  104401                         TYPE                    ;;TYPE A CR AND LF
014054  001177                         $CRLF
014056  105067  000130                 CLRB    $CHARCNT        ;;CLEAR CHARACTER COUNT
014062  000755                         BR      2$              ;;GET NEXT CHARACTER
014064  004767  000056          5$:    JSR     PC,$TYPEC       ;;GO TYPE THIS CHARACTER
014070  126726  165062          6$:    CMPB    $FILLC,(SP)+    ;;IS IT TIME FOR FILLER CHARS.?
014074  001350                         BNE     2$              ;;IF NO GO GET NEXT CHAR.
014076  016746  165052                 MOV     $NULL,-(SP)     ;;GET # OF FILLER CHARS. NEEDED
                                                               ;;AND THE NULL CHAR.
014102  105366  000001          7$:    DECB    1(SP)           ;;DOES A NULL NEED TO BE TYPED?
014106  002770                         BLT     6$              ;;BR IF NO--GO POP THE NULL OFF OF STACK
014110  004767  000032                 JSR     PC,$TYPEC       ;;GO TYPE A NULL
014114  105367  000072                 DECB    $CHARCNT        ;;DO NOT COUNT AS A COUNT
014120  000770                         BR      7$              ;;LOOP

                                        ;HORIZONTAL TAB PROCESSOR

014122  112716  000040          8$:    MOVB    #' ,(SP)        ;;REPLACE TAB WITH SPACE
014126  004767  000014          9$:    JSR     PC,$TYPEC       ;;TYPE A SPACE
014132  132767  000007  000052         BITB    #7,$CHARCNT     ;;BRANCH IF NOT AT
014140  001372                         BNE     9$              ;;TAB STOP
014142  005726                         TST     (SP)+           ;;POP SPACE OFF STACK
```

```
3418  014144  000724                          BR      2$              ;;GET NEXT CHARACTER
3419  014146  105777  164776        $TYPEC:   TSTB    @$TPS           ;;WAIT UNTIL PRINTER IS READY
3420  014152  100375                          BPL     $TYPEC
3421  014154  116677  000002  164770          MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
3422  014162  122766  000015  000002          CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
3423  014170  001003                          BNE     1$              ;;BRANCH IF NO
3424  014172  105067  000014                  CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
3425  014176  000406                          BR      $TYPEX          ;;EXIT
3426  014200  122766  000012  000002  1$:     CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
3427  014206  001402                          BEQ     $TYPEX          ;;BRANCH IF YES
3428  014210  105227                          INCB    (PC)+           ;;COUNT THE CHARACTER
3429  014212  000000        $CHARCNT:.WORD    0               ;;CHARACTER COUNT STORAGE
3430  014214  000207        $TYPEX:   RTS     PC
3431
3432                          .SBTTL  READ IN OCTAL NUMBER FROM THE TTY
3433
3434                          ;;**********************************************************************
3435                          ;*THIS ROUTINE WILL READ AN OCTAL (ASCII) NUMBER FROM THE TTY AND
3436                          ;*CHANGE IT TO BINARY.
3437                          ;*CALL:
3438                          ;*      RDOCT                   ;;READ AN OCTAL NUMBER
3439                          ;*      RETURN HERE             ;;LOW ORDER BITS ARE ON TOP OF THE STACK
3440                          ;*                              ;;HIGH ORDER BITS ARE IN $HIOCT
3441
3442  014216  011646        $RDOCT:   MOV     (SP),-(SP)      ;;PROVIDE SPACE FOR THE
3443  014220  016666  000004  000002          MOV     4(SP),2(SP)     ;;INPUT NUMBER
3444  014226  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
3445  014230  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
3446  014232  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
3447  014234  104410                  1$:     RDLIN                   ;;READ AN ASCIZ LINE
3448  014236  012600                          MOV     (SP)+,R0        ;;GET ADDRESS OF 1ST CHARACTER
3449  014240  005001                          CLR     R1              ;;CLEAR DATA WORD
3450  014242  005002                          CLR     R2
3451  014244  112046                  2$:     MOVB    (R0)+,-(SP)     ;;PICKUP THIS CHARACTER
3452  014246  001412                          BEQ     3$              ;;IF ZERO GET OUT
3453  014250  006301                          ASL     R1              ;;*2
3454  014252  006102                          ROL     R2
3455  014254  006301                          ASL     R1              ;;*4
3456  014256  006102                          ROL     R2
3457  014260  006301                          ASL     R1              ;;*8
3458  014262  006102                          ROL     R2
3459  014264  042716  177770                  BIC     #^C7,(SP)       ;;STRIP THE ASCII JUNK
3460  014270  062601                          ADD     (SP)+,R1        ;;ADD IN THIS DIGIT
3461  014272  000764                          BR      2$              ;;LOOP
3462  014274  005726                  3$:     TST     (SP)+           ;;CLEAN TERMINATOR FROM STACK
3463  014276  010166  000012                  MOV     R1,12(SP)       ;;SAVE THE RESULT
3464  014302  010267  000010                  MOV     R2,$HIOCT
3465  014306  012602                          MOV     (SP)+,R2        ;;POP STACK INTO R2
3466  014310  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
3467  014312  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
3468  014314  000002                          RTI                     ;;RETURN
3469  014316  000000        $HIOCT:  .WORD    0               ;;HIGH ORDER BITS GO HERE
3470                          .SBTTL  TTY INPUT ROUTINE
3471
3472                          ;;**********************************************************************
3473                          .ENABL  LSB
```

```
3474
3475                                    ;;**********************************************************************
3476                                    ;*SOFTWARE SWITCH REGISTER CHANGE ROUTINE.
3477                                    ;*ROUTINE IS ENTERED FROM THE TRAP HANDLER, AND WILL
3478                                    ;*SERVICE THE TEST FOR CHANGE IN SOFTWARE SWITCH REGISTER TRAP CALL
3479                                    ;*WHEN OPERATING IN TTY FLAG MODE.
3480  014320  022767  000176  164612  $CKSWR: CMP     #SWREG,SWR      ;;IS THE SOFT-SWR SELECTED?
3481  014326  001074                          BNE     15$             ;;BRANCH IF NO
3482  014330  105777  164610                  TSTB    @$TKS           ;;CHAR THERE?
3483  014334  100071                          BPL     15$             ;;IF NO, DON'T WAIT AROUND
3484  014336  117746  164604                  MOVB    @$TKB,-(SP)     ;;SAVE THE CHAR
3485  014342  042716  177600                  BIC     #^C177,(SP)     ;;STRIP-OFF THE ASCII
3486  014346  022726  000007                  CMP     #7,(SP)+        ;;IS IT A CONTROL G?
3487  014352  001062                          BNE     15$             ;;NO, RETURN TO USER
3488  014354  126727  164554  000001          CMPB    $AUTOB,#1       ;;ARE WE RUNNING IN AUTO-MODE?
3489  014362  001456                          BEQ     15$             ;;BRANCH IF YES
3490
3491  014364  104401  015045                  TYPE    ,$CNTLG         ;;ECHO THE CONTROL-G (^G)
3492  014370  104401  015052          $GTSWR: TYPE    ,$MSWR          ;;TYPE CURRENT CONTENTS
3493  014374  016746  163576                  MOV     SWREG,-(SP)     ;;SAVE SWREG FOR TYPEOUT
3494  014400  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
3495  014402  104401  015063                  TYPE    ,$MNEW          ;;PROMPT FOR NEW SWR
3496  014406  005046                  19$:    CLR     -(SP)           ;;CLEAR COUNTER
3497  014410  005046                          CLR     -(SP)           ;;THE NEW SWR
3498  014412  105777  164526          7$:     TSTB    @$TKS           ;;CHAR THERE?
3499  014416  100375                          BPL     7$              ;;IF NOT TRY AGAIN
3500
3501  014420  117746  164522                  MOVB    @$TKB,-(SP)     ;;PICK UP CHAR
3502  014424  042716  177600                  BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
3503
3504
3505
3506  014430  021627  000025          9$:     CMP     (SP),#25        ;;IS IT A CONTROL-U?
3507  014434  001005                          BNE     10$             ;;BRANCH IF NOT
3508  014436  104401  015040                  TYPE    ,$CNTLU         ;;YES, ECHO CONTROL-U (^U)
3509  014442  062706  000006          20$:    ADD     #6,SP           ;;IGNORE PREVIOUS INPUT
3510  014446  000757                          BR      19$             ;;LET'S TRY IT AGAIN
3511
3512
3513  014450  021627  000015          10$:    CMP     (SP),#15        ;;IS IT A <CR>?
3514  014454  001022                          BNE     16$             ;;BRANCH IF NO
3515  014456  005766  000004                  TST     4(SP)           ;;YES, IS IT THE FIRST CHAR?
3516  014462  001403                          BEQ     11$             ;;BRANCH IF YES
3517  014464  016677  000002  164446          MOV     2(SP),@SWR      ;;SAVE NEW SWR
3518  014472  062706  000006          11$:    ADD     #6,SP           ;;CLEAR UP STACK
3519  014476  104401  001177          14$:    TYPE    ,$CRLF          ;;ECHO <CR> AND <LF>
3520  014502  126727  164427  000001          CMPB    $INTAG,#1       ;;RE-ENABLE TTY KBD INTERRUPTS?
3521  014510  001003                          BNE     15$             ;;BRANCH IF NOT
3522  014512  012777  000100  164424          MOV     #100,@$TKS      ;;RE-ENABLE TTY KBD INTERRUPTS
3523  014520  000002                  15$:    RTI                     ;;RETURN
3524  014522  004767  177420          16$:    JSR     PC,$TYPEC       ;;ECHO CHAR
3525  014526  021627  000060                  CMP     (SP),#60        ;;CHAR < 0?
3526  014532  002420                          BLT     18$             ;;BRANCH IF YES
3527  014534  021627  000067                  CMP     (SP),#67        ;;CHAR > 7?
3528  014540  003015                          BGT     18$             ;;BRANCH IF YES
3529  014542  042726  000060                  BIC     #60,(SP)+       ;;STRIP-OFF ASCII
```

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 3530  014546  005766  000002              TST     2(SP)           ;;IS THIS THE FIRST CHAR
 3531  014552  001403                      BEQ     17$             ;;BRANCH IF YES
 3532  014554  006316                      ASL     (SP)            ;;NO, SHIFT PRESENT
 3533  014556  006316                      ASL     (SP)            ;;   CHAR OVER TO MAKE
 3534  014560  006316                      ASL     (SP)            ;;   ROOM FOR NEW ONE.
 3535  014562  005266  000002      17$:    INC     2(SP)           ;;KEEP COUNT OF CHAR
 3536  014566  056616  177776              BIS     -2(SP),(SP)     ;;SET IN NEW CHAR
 3537  014572  000707                      BR      7$              ;;GET THE NEXT ONE
 3538  014574  104401  001176      18$:    TYPE    ,$QUES          ;;TYPE ?<CR><LF>
 3539  014600  000720                      BR      20$             ;;SIMULATE CONTROL-U
 3540                              .DSABL  LSB
 3541
 3542
 3543                              ;;**********************************************************************
 3544                              ;*THIS ROUTINE WILL INPUT A SINGLE CHARACTER FROM THE TTY
 3545                              ;*CALL:
 3546                              ;*      RDCHR                   ;;INPUT A SINGLE CHARACTER FROM THE TTY
 3547                              ;*      RETURN HERE             ;;CHARACTER IS ON THE STACK
 3548                              ;*                              ;;WITH PARITY BIT STRIPPED OFF
 3549                              ;
 3550
 3551  014602  011646      $RDCHR: MOV     (SP),-(SP)      ;;PUSH DOWN THE PC
 3552  014604  016666  000004  000002      MOV     4(SP),2(SP)     ;;SAVE THE PS
 3553  014612  105777  164326      1$:     TSTB    @$TKS           ;;WAIT FOR
 3554  014616  100375                      BPL     1$              ;;A CHARACTER
 3555  014620  117766  164322  000004      MOVB    @$TKB,4(SP)     ;;READ THE TTY
 3556  014626  042766  177600  000004      BIC     #^C<177>,4(SP)  ;;GET RID OF JUNK IF ANY
 3557  014634  026627  000004  000023      CMP     4(SP),#23       ;;IS IT A CONTROL-S?
 3558  014642  001013                      BNE     3$              ;;BRANCH IF NO
 3559  014644  105777  164274      2$:     TSTB    @$TKS           ;;WAIT FOR A CHARACTER
 3560  014650  100375                      BPL     2$              ;;LOOP UNTIL ITS THERE
 3561  014652  117746  164270              MOVB    @$TKB,-(SP)     ;;GET CHARACTER
 3562  014656  042716  177600              BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
 3563  014662  022627  000021              CMP     (SP)+,#21       ;;IS IT A CONTROL-Q?
 3564  014666  001366                      BNE     2$              ;;IF NOT DISCARD IT
 3565  014670  000750                      BR      1$              ;;YES, RESUME
 3566  014672  026627  000004  000140  3$: CMP     4(SP),#140      ;;IS IT UPPER CASE?
 3567  014700  002407                      BLT     4$              ;;BRANCH IF YES
 3568  014702  026627  000004  000175      CMP     4(SP),#175      ;;IS IT A SPECIAL CHAR?
 3569  014710  003003                      BGT     4$              ;;BRANCH IF YES
 3570  014712  042766  000040  000004      BIC     #40,4(SP)       ;;MAKE IT UPPER CASE
 3571  014720  000002              4$:     RTI                     ;;GO BACK TO USER
 3572                              ;;**********************************************************************
 3573                              ;*THIS ROUTINE WILL INPUT A STRING FROM THE TTY
 3574                              ;*CALL:
 3575                              ;*      RDLIN                   ;;INPUT A STRING FROM THE TTY
 3576                              ;*      RETURN HERE             ;;ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK
 3577                              ;*                              ;;TERMINATOR WILL BE A BYTE OF ALL 0'S
 3578
 3579  014722  010346      $RDLIN: MOV     R3,-(SP)        ;;SAVE R3
 3580  014724  012703  015030      1$:     MOV     #$TTYIN,R3      ;;GET ADDRESS
 3581  014730  022703  015040      2$:     CMP     #$TTYIN+8.,R3   ;;BUFFER FULL?
 3582  014734  101405                      BLOS    4$              ;;BR IF YES
 3583  014736  104407                      RDCHR                   ;;GO READ ONE CHARACTER FROM THE TTY
 3584  014740  112613                      MOVB    (SP)+,(R3)      ;;GET CHARACTER
 3585  014742  122713  000177      10$:    CMPB    #177,(R3)       ;;IS IT A RUBOUT
```

```
3586  014746  001003                        BNE     3$              ;;SKIP IF NOT
3587  014750  104401  001176        4$:     TYPE    $QUES           ;;TYPE A '?'
3588  014754  000763                        BR      1$              ;;CLEAR THE BUFFER AND LOOP
3589  014756  111367  000044        3$:     MOVB    (R3),9$         ;;ECHO THE CHARACTER
3590  014762  104401  015026                TYPE    ,9$
3591  014766  122723  000015                CMPB    #15,(R3)+       ;;CHECK FOR RETURN
3592  014772  001356                        BNE     2$              ;;LOOP IF NOT RETURN
3593  014774  105063  177777                CLRB    -1(R3)          ;;CLEAR RETURN (THE 15)
3594  015000  104401  001200                TYPE    $LF             ;;TYPE A LINE FEED
3595  015004  012603                        MOV     (SP)+,R3        ;;RESTORE R3
3596  015006  011646                        MOV     (SP),-(SP)      ;;ADJUST THE STACK AND PUT ADDRESS OF THE
3597  015010  016666  000004  000002        MOV     4(SP),2(SP)     ;;      FIRST ASCII CHARACTER ON IT
3598  015016  012766  015030  000004        MOV     #$TTYIN,4(SP)
3599  015024  000002                        RTI                     ;;RETURN
3600  015026     000        9$:     .BYTE   0               ;;STORAGE FOR ASCII CHAR. TO TYPE
3601  015027     000                .BYTE   0               ;;TERMINATOR
3602  015030  000010        $TTYIN: .BLKB   8.              ;;RESERVE 8 BYTES FOR TTY INPUT
3603  015040  052536  005015  000  $CNTLU: .ASCIZ  /↑U/<15><12>    ;;CONTROL "U"
3604  015045     136  006507  000012  $CNTLG: .ASCIZ  /↑G/<15><12>    ;;CONTROL "G"
3605  015052  005015  053523  020122  $MSWR:  .ASCIZ  <15><12>/SWR = /
3606  015060  020075     000
3607  015063     040  047040  053505  $MNEW:  .ASCIZ  /  NEW = /
3608  015070  036440  000040
3609                                  .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
3610
3611                                  ;;**************************************************************
3612                                  ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
3613                                  ;*OCTAL (ASCII) NUMBER AND TYPE IT.
3614                                  ;*$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
3615                                  ;*CALL:
3616                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
3617                                  ;*      TYPOS                   ;;CALL FOR TYPEOUT
3618                                  ;*      .BYTE   N               ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
3619                                  ;*      .BYTE   M               ;;M=1 OR 0
3620                                  ;*                                      ;;1=TYPE LEADING ZEROS
3621                                  ;*                                      ;;0=SUPPRESS LEADING ZEROS
3622                                  ;*
3623                                  ;*$TYPON----ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
3624                                  ;*$TYPOS OR $TYPOC
3625                                  ;*CALL:
3626                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
3627                                  ;*      TYPON                   ;;CALL FOR TYPEOUT
3628                                  ;*
3629                                  ;*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
3630                                  ;*CALL:
3631                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
3632                                  ;*      TYPOC                   ;;CALL FOR TYPEOUT
3633
3634  015074  017646  000000        $TYPOS: MOV     @(SP),-(SP)     ;;PICKUP THE MODE
3635  015100  116667  000001  000211        MOVB    1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
3636  015106  112667  000207                MOVB    (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
3637  015112  062716  000002                ADD     #2,(SP)         ;;ADJUST RETURN ADDRESS
3638  015116  000406                        BR      $TYPON
3639  015120  112767  000001  000171  $TYPOC: MOVB    #1,$OFILL       ;;SET THE ZERO FILL SWITCH
3640  015126  112767  000006  000165        MOVB    #6,$OMODE+1     ;;SET FOR SIX(6) DIGITS
3641  015134  112767  000005  000154  $TYPON: MOVB    #5,$OCNT        ;;SET THE ITERATION COUNT
```

```
 3642  015142  010346                          MOV     R3,-(SP)        ;;SAVE R3
 3643  015144  010446                          MOV     R4,-(SP)        ;;SAVE R4
 3644  015146  010546                          MOV     R5,-(SP)        ;;SAVE R5
 3645  015150  116704  000145                  MOVB    $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
 3646  015154  005404                          NEG     R4
 3647  015156  062704  000006                  ADD     #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
 3648  015162  110467  000132                  MOVB    R4,$OMODE       ;;SAVE IT FOR USE
 3649  015166  116704  000125                  MOVB    $OFILL,R4       ;;GET THE ZERO FILL SWITCH
 3650  015172  016605  000012                  MOV     12(SP),R5       ;;PICKUP THE INPUT NUMBER
 3651  015176  005003                          CLR     R3              ;;CLEAR THE OUTPUT WORD
 3652  015200  006105                  1$:     ROL     R5              ;;ROTATE MSB INTO "C"
 3653  015202  000404                          BR      3$              ;;GO DO MSB
 3654  015204  006105                  2$:     ROL     R5              ;;FORM THIS DIGIT
 3655  015206  006105                          ROL     R5
 3656  015210  006105                          ROL     R5
 3657  015212  010503                          MOV     R5,R3
 3658  015214  006103                  3$:     ROL     R3              ;;GET LSB OF THIS DIGIT
 3659  015216  105367  000076                  DECB    $OMODE          ;;TYPE THIS DIGIT?
 3660  015222  100016                          BPL     7$              ;;BR IF NO
 3661  015224  042703  177770                  BIC     #177770,R3      ;;GET RID OF JUNK
 3662  015230  001002                          BNE     4$              ;;TEST FOR 0
 3663  015232  005704                          TST     R4              ;;SUPPRESS THIS 0?
 3664  015234  001403                          BEQ     5$              ;;BR IF YES
 3665  015236  005204                  4$:     INC     R4              ;;DON'T SUPPRESS ANYMORE 0'S
 3666  015240  052703  000060                  BIS     #'0,R3          ;;MAKE THIS DIGIT ASCII
 3667  015244  052703  000040          5$:     BIS     #' ,R3          ;;MAKE ASCII IF NOT ALREADY
 3668  015250  110367  000040                  MOVB    R3,8$           ;;SAVE FOR TYPING
 3669  015254  104401  015314                  TYPE    ,8$             ;;GO TYPE THIS DIGIT
 3670  015260  105367  000032          7$:     DECB    $OCNT           ;;COUNT BY 1
 3671  015264  003347                          BGT     2$              ;;BR IF MORE TO DO
 3672  015266  002402                          BLT     6$              ;;BR IF DONE
 3673  015270  005204                          INC     R4              ;;INSURE LAST DIGIT ISN'T A BLANK
 3674  015272  000744                          BR      2$              ;;GO DO THE LAST DIGIT
 3675  015274  012605                  6$:     MOV     (SP)+,R5        ;;RESTORE R5
 3676  015276  012604                          MOV     (SP)+,R4        ;;RESTORE R4
 3677  015300  012603                          MOV     (SP)+,R3        ;;RESTORE R3
 3678  015302  016666  000002  000004          MOV     2(SP),4(SP)     ;;SET THE STACK FOR RETURNING
 3679  015310  012616                          MOV     (SP)+,(SP)
 3680  015312  000002                          RTI                     ;;RETURN
 3681  015314     000                  8$:     .BYTE   0               ;;STORAGE FOR ASCII DIGIT
 3682  015315     000                          .BYTE   0               ;;TERMINATOR FOR TYPE ROUTINE
 3683  015316     000                  $OCNT:  .BYTE   0               ;;OCTAL DIGIT COUNTER
 3684  015317     000                  $OFILL: .BYTE   0               ;;ZERO FILL SWITCH
 3685  015320  000000                  $OMODE: .WORD   0               ;;NUMBER OF DIGITS TO TYPE
```

```
                                        .SBTTL  TRAP DECODER

                                        ;;**********************************************************************
                                        ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
                                        ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
                                        ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
                                        ;*GO TO THAT ROUTINE.

015322  010046                  $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
015324  016600  000002                  MOV     2(SP),R0        ;;GET TRAP ADDRESS
015330  005740                          TST     -(R0)           ;;BACKUP BY 2
015332  111000                          MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
015334  006300                          ASL     R0              ;;POSITION FOR INDEXING
015336  016000  015356                  MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
015342  000200                          RTS     R0              ;;GO TO ROUTINE

                                        ;;THIS IS USE TO HANDLE THE "GETPRI" MACRO

015344  011646                  $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
015346  016666  000004  000002          MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
015354  000002                          RTI                     ;;RESTORE THE PSW

                                        .SBTTL  TRAP TABLE

                                        ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
                                        ;*BY THE "TRAP" INSTRUCTION.

                                        ;       ROUTINE
                                        ;       -------
015356  015344                  $TRPAD: .WORD   $TRAP2
015360  013776                          $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
015362  015120                          $TYPOC  ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
015364  015074                          $TYPOS  ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
015366  015134                          $TYPON  ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)

015370  014370                          $GTSWR  ;;CALL=GTSWR    TRAP+5(104405)  GET SOFT-SWR SETTING

015372  014320                          $CKSWR  ;;CALL=CKSWR    TRAP+6(104406)  TEST FOR CHANGE IN SOFT-SWR
015374  014602                          $RDCHR  ;;CALL=RDCHR    TRAP+7(104407)  TTY TYPEIN CHARACTER ROUTINE
015376  014722                          $RDLIN  ;;CALL=RDLIN    TRAP+10(104410) TTY TYPEIN STRING ROUTINE
015400  014216                          $RDOCT  ;;CALL=RDOCT    TRAP+11(104411) READ AN OCTAL NUMBER FROM TTY
015402  012014                          WAIT.ON.READY   ;;CALL=WAITREADY        TRAP+12(104412) WAIT ON THE READY BIT TO
015404  012120                          WAIT.FOR.XFER   ;;CALL=WAITXFER TRAP+13(104413) WAIT ON XFER REQ.
```

```
                                        .SBTTL  POWER DOWN AND UP ROUTINES

                                        ;;**********************************************************************
                                        ;POWER DOWN ROUTINE
015406  012737  015552  000024  $PWRDN: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST UP
015414  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;PRIO:7
015422  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
015424  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
015426  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
015430  010346                          MOV     R3,-(SP)        ;;PUSH R3 ON STACK
015432  010446                          MOV     R4,-(SP)        ;;PUSH R4 ON STACK
015434  010546                          MOV     R5,-(SP)        ;;PUSH R5 ON STACK
015436  017746  163476                  MOV     @SWR,-(SP)      ;;PUSH @SWR ON STACK
015442  010667  000110                  MOV     SP,$SAVR6       ;;SAVE SP
015446  012737  015460  000024          MOV     #$PWRUP,@#PWRVEC ;;SET UP VECTOR
015454  000000                          HALT
015456  000776                          BR      .-2             ;;HANG UP

                                        ;;**********************************************************************
                                        ;POWER UP ROUTINE
015460  012737  015552  000024  $PWRUP: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST DOWN
015466  016706  000064                  MOV     $SAVR6,SP       ;;GET SP
015472  005067  000060                  CLR     $SAVR6          ;;WAIT LOOP FOR THE TTY
015476  005267  000054          1$:     INC     $SAVR6          ;;WAIT FOR THE INC
015502  001375                          BNE     1$              ;;OF  WORD
015504  012677  163430                  MOV     (SP)+,@SWR      ;;POP STACK INTO @SWR
015510  012605                          MOV     (SP)+,R5        ;;POP STACK INTO R5
015512  012604                          MOV     (SP)+,R4        ;;POP STACK INTO R4
015514  012603                          MOV     (SP)+,R3        ;;POP STACK INTO R3
015516  012602                          MOV     (SP)+,R2        ;;POP STACK INTO R2
015520  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
015522  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
015524  012737  015406  000024          MOV     #$PWRDN,@#PWRVEC ;;SET UP THE POWER DOWN VECTOR
015532  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;PRIO:7
015540  104401                          TYPE                    ;REPORT THE POWER FAILURE
015542  015560          $PWRMG: .WORD   $POWER                  ;;POWER FAIL MESSAGE POINTER
015544  012716                  MOV     (PC)+,(SP)              ;;RESTART AT PWRST
015546  002222          $PWRAD: .WORD   PWRST                   ;;RESTART ADDRESS
015550  000002                  RTI
015552  000000          $ILLUP: HALT                            ;;THE POWER UP SEQUENCE WAS STARTED
015554  000776                  BR      .-2                     ;; BEFORE THE POWER DOWN WAS COMPLETE
015556  000000          $SAVR6: 0                               ;;PUT THE SP HERE
015560  005015  047520  042527  $POWER: .ASCIZ  <15><12>"POWER"
015566  000122
                                        .EVEN
```

```
3775  015570  042200  044522  042526  MSGDRV: .ASCIZ  <CRLF>/DRIVE(S)?/
3776  015576  051450  037451     000
3777  015603     015  052012  041501  MSGASK: .ASCIZ  <15><12>/TACS?/
3778  015610  037523     000
3779  015613     126  041505  047524  MSGVEC: .ASCIZ  /VECTOR?/
3780  015620  037522     000
3781  015623     120  044522  051117  MSGPRI: .ASCIZ  /PRIORITY?/
3782  015630  052111  037531     000
3783  015635     124  041501  036523  MTACS:  .ASCIZ  /TACS=/
3784  015642     000
3785  015643     040  040524  041104  MTADB:  .ASCIZ  / TADB=/
3786  015650  000075
3787  015652  053040  041505  047524  MTAVEC: .ASCIZ  / VECTOR=/
3788  015660  036522     000
3789  015663     040  051120  047511  MTAPRI: .ASCIZ  / PRIORITY=/
3790  015670  044522  054524  000075
3791  015676  005015  045517  000077  MSGOK:  .ASCIZ  <15><12>/OK?/
3792  015704  042531  006523  000012  MYES:   .ASCIZ  /YES/<15><12>
3793  015712  052123  052101  051525  EM1:    .ASCIZ  /STATUS PROBLEM/
3794  015720  050040  047522  046102
3795  015726  046505     000
3796  015731     042  042522  042101  EM2:    .ASCIZ  /"READY" FAILED TO SET/
3797  015736  021131  043040  044501
3798  015744  042514  020104  047524
3799  015752  051440  052105     000
3800  015757     042  051124  047101  EM3:    .ASCIZ  /"TRANSFER REQUEST" FAILED TO SET/
3801  015764  043123  051105  051040
3802  015772  050505  042525  052123
3803  016000  020042  040506  046111
3804  016006  042105  052040  020117
3805  016014  042523  000124
3806  016020  044124  020105  051127  EM4:    .ASCIZ  /THE WRONG FLAG SET/
3807  016026  047117  020107  046106
3808  016034  043501  051440  052105
3809  016042     000
3810  016043     103  052517  052116  EM5:    .ASCIZ  /COUNT PATTERN FAILED/
3811  016050  050040  052101  042524
3812  016056  047122  043040  044501
3813  016064  042514  000104
3814  016070  040504  040524  050040  EM6:    .ASCIZ  /DATA PROBLEM/
3815  016076  047522  046102  046505
3816  016104     000
3817  016105     101  042104  042522  EM10:   .ASCIZ  /ADDRESS FAILED/
3818  016112  051523  043040  044501
3819  016120  042514  000104
3820  016124  041520  020040  020040  DH1:    .ASCIZ  /PC      TACS/
3821  016132  020040  040524  051503
3822  016140     000
3823  016141     120  020103  020040  DH2:    .ASCIZ  /PC      TACS    WAIT ADDRESS/
3824  016146  020040  052040  041501
3825  016154  020123  020040  053440
3826  016162  044501  020124  042101
3827  016170  051104  051505  000123
3828  016176  041520  020040  020040  DH5:    .ASCIZ  /PC      TACS    EXPECT  RCV'D/
3829  016204  020040  040524  051503
3830  016212  020040  020040  054105
```

```
3831  016220  042520  052103  020040
3832  016226  041522  023526  000104
3833  016234  041520  020040  020040  DH6:    .ASCIZ  /PC      TADB/
3834  016242  020040  040524  041104
3835  016250     000
3836  016251     120  020103  020040  DH10:   .ASCIZ  /PC      ADDRESS/
3837  016256  020040  040440  042104
3838  016264  042522  051523     000
3839          016272                  .EVEN
3840  016272  001116  001162  000000  DT1:    .WORD   $ERRPC,$REGO,0
3841  016300  001116  001162  001202  DT2:    .WORD   $ERRPC,$REGO,SAVPC,0
3842  016306  000000
3843  016310  001116  001162  001124  DT5:    .WORD   $ERRPC,$REGO,$GDDAT,$BDDAT,0
3844  016316  001126  000000
3845  016322  001116  001164  000000  DT6:    .WORD   $ERRPC,$REG1,0
3846  016330  001116  001122  000000  DT10:   .WORD   $ERRPC,$BDADR,0
3847  016336  001116  001206  000000  DT201:  .WORD   $ERRPC,TACSL,0
3848
3849  016344  001116  000000          DT202:  .WORD   $ERRPC,0
3850
3851  016350  040524  030461  043040  EM201:  .ASCIZ  "TA11 FAILED TO RESPOND"
3852  016356  044501  042514  020104
3853  016364  047524  051040  051505
3854  016372  047520  042116     000
3855  016377     116  020117  051104  EM202:  .ASCIZ  "NO DRIVE AVAILABLE"
3856  016404  053111  020105  053101
3857  016412  044501  040514  046102
3858  016420  000105
3859  016422  041520  020040  020040  DH201:  .ASCIZ  /PC      TACS/
3860  016430  020040  040524  051503
3861  016436     000
3862  016437     120  000103          DH202:  .ASCIZ  /PC/
3863          000001                  .END
```

```
ASKADR  012332          1068    2990#
ASKDRV  012222          1065    2957#   2980
ASKKEY  001232           890#   1155*   1191
BEGINX  001760          1062#   1098    1100    1148    1150
BEGIN1  001256           727     981#
BEGIN2  001410           728     988#
BEGIN3  001416           729     987     990#
BEGIN4  001424           730     992#
BGNCMN  001430           984     986     989     991     993#
BIT0  = 000001           662#
BIT00 = 000001           652#    662     704     1452    1911    3353    3355
BIT01 = 000002           651#    661     703     1443    1601    1602    1606    1607    1615    1616    1621    3355
BIT02 = 000004           650#    660     702     1434    1574    1575    1579    1580    1588    1589    1594    1898    1900
BIT03 = 000010           649#    659     701     1425    1547    1548    1552    1553    1561    1562    1567
BIT04 = 000020           648#    658     700     1416    1520    1521    1525    1526    1534    1535    1540
BIT05 = 000040           647#    657     699     1657    1878    1879    1882
BIT06 = 000100           646#    656     698     1407    1493    1494    1498    1499    1507    1508    1513
BIT07 = 000200           645#    655     697     1398    1858    1859    1862    3353    3355
BIT08 = 000400           644#    654     696     1389    1466    1467    1471    1472    1480    1481    1486    1909    1936
                        1937    2775
BIT09 = 001000           643#    653     695     1667    1838    1839    1842    2783    2847
BIT1  = 000002           661#
BIT10 = 002000           642#    694     1380    1818    1819    1822    2831
BIT11 = 004000           641#    693     1371    1798    1799    1802    2790
BIT12 = 010000           640#    692     1678    1778    1779    1782
BIT13 = 020000           639#    691     1688    1758    1759    1762    2838
BIT14 = 040000           638#    690     1362    1738    1739    1742    2761
BIT15 = 100000           637#    689     1166    1698    1718    1719    1722
BIT2  = 000004           660#
BIT3  = 000010           659#
BIT4  = 000020           658#
BIT5  = 000040           657#
BIT6  = 000100           656#
BIT7  = 000200           655#
BIT8  = 000400           654#
BIT9  = 001000           653#
BLKLIM  013500          3257*   3271#   3278    3295
BPTVEC= 000014           669#
BSBG  = 000010           682#    1982    2291    2434    2441
BSFG  = 000006           681#    1978    2276    2405    2412    3234
BSFGSB  013336           737     3231#   3232    3239
CHKADR  002002          1064    1067    1086#
CHKDRV  002062          1124#
CKSWR = 104406          2760    2823    2846    3724#
CR    = 000015           577#    3422    3432
CRCERR= 040000           690#
CRLF  = 000200           578#    1050    3393    3432    3775
CURDRV  001234           891#    1184*   1185
DDISP = 177570           584#     860    1021
DH1     016124           912     3820#
DH10    016251           954     3836#
DH2     016141           918     924     930     3823#
DH201   016422           961     3859#
DH202   016437           966     3862#
DH5     016176           936     948     3828#
DH6     016234           942     3833#
```

DZTAAC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
DISPLA  001142          860*  1021*  1029*  2804*  2830*
DISPRE  000174          724*  1029
DRIVE =%000003          711*   798   820   1174*  1178*  1202  1656  1666  1676  1687  1697  1962  2011
                       2036   2060  2075   2090   2101   2119  2130  2142  2169  2189  2216  2221  2228
                       2244   2259  2274   2289   2304   2319  2335  2340  2347  2370  2375  2382  2399
                       2404   2411  2428   2433   2440   2457  2462  2469  2486  2491  2498  2514  2534
                       2541   2577  2630   2656   2682   2706  3070  3103  3126  3158  3186  3214  3233
                       3320*  3324*
DRVKEY  001224          888*   889   982*  1124   1137   1158  1189  2958*  2963  2977  2981  3327
DRVPNT  001230          889*  1138*  1158*  1175   1190*  3321  3328*
DSWR  = 177570          583*   859  1020
DT1     016272          913   3840*
DT10    016330          955   3846*
DT2     016300          919    925   931   3841*
DT201   016336          962   3847*
DT202   016344          967   3849*
DT5     016310          937    949  3843*
DT6     016322          943   3845*
EMTVEC= 000030          672*  1004*  1005*  1227   1228*  1232*  1250  1251*  1255*  1273  1274*  1278*  1296
                       1297*  1301*  1319   1320*  1324*  1342  1343*  1347*
EM1     015712          911   3793*
EM10    016105          953   3817*
EM2     015731          917   3796*
EM201   016350          960   3851*
EM202   016377          965   3855*
EM3     015757          923   3800*
EM4     016020          929   3806*
EM5     016043          935   3810*
EM6     016070          941    947  3814*
ERROR = 100000          689*  2153
ERROR1  011516         1228   1251  1274   1297   1320   1343  2826*
ERRVEC= 000004          665*  1018  1019*  1030*  1086*  1092*  1222*  1225*  1234*  1245*  1248*  1257*  1268*
                       1271*  1280* 1291*  1294*  1303*  1314*  1317*  1326*  1337*  1340*  1349*  2766   2767*
                       2769*  2772*
EXAM    013672         1125   1129  1134   3340*
EXIT    012322         2976   2981*
FGAP  = 004000          693*
FUNCTI= 000016          705*  1920  1923   1924   1933   1946  1950
FUNC0 = 000002          703*   705
FUNC1 = 000004          702*   705
FUNC2 = 000010          701*   705
GNS   = ****** U        723   1049  1171   1182   3717   3718  3719  3720  3722  3724  3725  3726  3727
                       3728   3729
GO    = 000001          704*   799   802    821    824   1203  2014  2039  2062  2077  2092  2121  2143
                       2151   2170  2172   2190   2218   2222  2229  2246  2261  2276  2291  2306  2321
                       2337   2341  2348   2372   2376   2383  2401  2405  2412  2430  2434  2441  2459
                       2463   2470  2488   2492   2499   2536  2538  2579  2581  2593  2591  2593  2631
                       2633   2636  2657   2659   2662   2683  2685  2688  2707  3071  3074  3104  3127
                       3159   3162  3187   3193   3215   3218  3234  3279  3297
GTSWR = 104405         1044   1197  3249   3262   3268   3722*
HERE    001760         1035   1037  1048   1050*
HGHTIM  012072         2174   2900* 2914*
HT    = 000011          575*  3391  3432
ILBS  = 000020          700*  1920  1923   1924   1933   1946  1950  2561  2589  2600  2646  2672  2698
                       3287   3308
INT.EN= 000100          698*  1920  1923   1924   1933   1946  1950
```

```
IOTVEC= 000020            670#   1002*  1003*
ITEMS2  001336            958#
LEADER= 020000            691#   1963   2024   2049   2148   2153   2192   2203   2234   2353   2388   2417   2446
                         2475    2504   3076   3108   3131   3164   3167   3191   3195   3220   3236   3358
LF    = 000012            576#   3426   3432
LOOP    012246           2964#   2978
LOOP1   000500            787#    788
LOOP2   000600            797#    808
LOOP3   000700            819#    830
MANUAL  002202           1144    1152#
MAXCNT  012116           1166*   2174*  2175*  2176*  2177*  2900   2921#  2928
MSGASK  015603           2991    3777#
MSGDRV  015570           2957    3775#
MSGID   001732           1038    1050#  1157
MSGOK   015676           3038    3791#
MSGPRI  015623           3014    3781#
MSGVEC  015613           3005    3779#
MTACS   015635           3026    3783#
MTADB   015643           3029    3785#
MTAPRI  015663           3035    3789#
MTAVEC  015652           3032    3787#
MYES    015704           3047    3792#
NEXT    012302           2967    2971   2975#
NOTA    012260           2965    2968#
NOTB    012272           2969    2972#
NOTLGL  012314           2962    2973   2979#  2982
NXTDRV  013626           3069    3102   3125   3157   3185   3213   3318#
OFFLIN= 001000            695#   3349
OK      002214           1153    1155#
PATTRN  013502           3258*   3264*  3272#  3285   3296
PC    =%000007            596#   1065*  1068*  1125*  1129*  1134*  2096*  2125*  2199*  2725*  2728*  2735*  2740
                         2840*   2884*  2910*  2913*  2938*  2941*  2983*  3049*  3069*  3096*  3102*  3107*  3125*
                         3130*   3151*  3157*  3166*  3185*  3190*  3213*  3270*  3289*  3313*  3329*  3361*  3400*
                         3407*   3414*  3428*  3430*  3524*  3766
PIRQ  = 177772            582#
PIRQVE= 000240            676#
PR0   = 000000            599#
PR1   = 000040            600#
PR2   = 000100            601#
PR3   = 000140            602#
PR4   = 000200            603#
PR5   = 000240            604#
PR6   = 000300            605#
PR7   = 000340            606#
PS    = 177776            579#    580    1161#
PSW   = 177776            580#
PWRST   002222           1157#   3767
PWRVEC= 000024            671#   1008*  1009*  3734*  3735*  3744*  3750*  3762*  3763*
RDBLK   013546           3130    3190   3295#
RDCHR = 104407           3039    3583   3725#
RDLIN = 104410           2959    3447   3726#
RDOCT = 104411           2992    3006   3015   3727#
RDSUB   012774            733    3120#  3124   3132
READ  = 000004            680#    824   1974   2261   2376   2383   2593   3297
READY = 000040            699#    800    807    822    829   1204   2015   2021   2040   2046   2063   2078   2094
                         2102    2123   2131   2197   2223   2247   2262   2277   2292   2307   2322   2342   2377
```

DZTAAC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
                    2406    2435    2464    2493    2904    2934    3072    3105    3128    3160    3188    3216    3281
                    3299    3345
RESVEC= 000010        666#
REWIND= 000016        685#     799     821    1203    1994    2014    2062    2092    2143    2170    2190    2218    2337
                    2372    2401    2430    2459    2488    2536    2579    2591    2631    2657    2683    2707    3071
                    3104    3127    3159    3187    3215
RGPBLK  013156        735    3180#   3184    3192    3196
R0     =%000000       587#    827*   1087*   1090*   1093    1099*   1124*   1127*   1131*   1133*   1136*   1137*   1138
                    1139    1141*   1142    1149*   1193*   1630*   1634    1637*   1639    1715*   1716    1718*   1723
                    1735*   1736    1738*   1743    1755*   1756    1758*   1763    1775*   1776    1778*   1783    1795*
                    1796    1798*   1803    1815*   1816    1818*   1823    1835*   1836    1838*   1843    1855*   1856
                    1858*   1863    1875*   1876    1878*   1883    2013*   2019*   2038*   2044*   2220*   2225*   2339*
                    2344*   2349*   2352*   2374*   2379*   2403*   2408*   2432*   2437*   2461*   2466*   2490*   2495*
                    2543*   2544*   2550*   2551*   2611*   2619*   2635*   2638    2641    2644*   2661*   2664    2667
                    2670*   2687*   2690    2693    2696*   2732*   2735    2826    2864    2865*   2866*   2867*   2868*
                    2869*   2870*   2871    2875    2880*   2882*   2886    2889    2960*   2961    2964    2966    2968
                    2970    2972    2974    2975    2990    2993*   2995    2997    2998*   2999    3007*   3009    3011
                    3012*   3013    3016*   3018    3020*   3021*   3022*   3023*   3024*   3025    3040*   3041    3043
                    3048*   3245*   3251*   3255*   3256*   3257    3296*   3304    3342    3383    3384*   3385    3388*
                    3444    3448*   3451    3467*   3694    3695*   3696    3697*   3698*   3699*   3700*   3736    3761*
R1     =%000001       588#   1175*   1176    1184    1187    1189*   1190    1632*   1633*   1634    1716*   1717*   1719*
                    1720    1721*   1722*   1723    1736*   1737*   1739*   1740    1741*   1742*   1743    1756*   1757*
                    1759*   1760    1761*   1762*   1763    1776*,  1777*   1779*   1780    1781*   1782*   1783    1796*
                    1797*   1799*   1800    1801*   1802*   1803    1816*   1817*   1819*   1820    1821*   1822*   1823
                    1836*   1837*   1839*   1840    1841*   1842*   1843    1856*   1857*   1859*   1860    1861*   1865
                    1863    1876*   1877*   1879*   1880    1881*   1882*   1883    2012*   2017*   2037*   2042*   2059*
                    2065*   2074*   2080*   2243*   2249*   2258*   2264*   2273*   2279*   2288*   2294*   2303*   2309*
                    2318*   2324*   2640*   2641    2666*   2667    2692*   2693    2827    2963*   2966*   2970*   2977
                    3278*   3283*   3303*   3304    3321*   3322    3325    3327*   3328    3340*   3341*   3344*   3345
                    3347    3349    3351    3358    3445    3449*   3453*   3455*   3457*   3460*   3463    3466*   3737
                    3760*
R2     =%000002       589#   1631*   1637    1638    3295*   3301*   3446    3450*   3454*   3456*   3458*   3464    3465*
                    3738    3759*
R3     =%000003       590#   3579    3580*   3581    3584*   3585    3589    3591    3593*   3595*   3642    3651*   3657*
                    3658*   3661*   3666*   3667*   3668    3677*   3739    3758*
R4     =%000004       591#   1062*   1097    1147    1152    1154*   1155    3643    3645*   3646*   3647*   3648    3649*
                    3663    3665*   3673*   3676*   3740    3757*
R5     =%000005       592#    981*    988*    990*    992*   1062    1063*   1066*   1096*   1146*   3644    3650*   3652*
                    3654*   3655*   3656*   3657    3675*   3741    3756*
R6     =%000006       593#    595     996*    997*    998
R7     =%000007       594#    596
SAVPC   001202        880#   2901*   2902*   2918    2929*   2930*   2946    3841
SAVPS   001204        881#   2903*   2917    2931*   2945
SETBUF  013370       3096    3151    3245#
SFBG   = 000014       684#   1990    2321    2492    2499    3193
SFFG   = 000012       683#   1986    2306    2463    2470    3218
SFFGSB  013252        736    3208#   3212    3223
SP     =%000006       595#   1000*   1018*   1026*   1030    1091    1221*   1226    1227*   1232    1244*   1249    1250*
                    1255    1267*   1272    1273*   1278    1290*   1295    1296*   1301    1313*   1318    1319*   1324
                    1336*   1341    1342*   1347    2766*   2769    2771    2772    2800    2801    2805*   2835    2849*
                    2852*   2864*   2882    2886*   2901    2903    2917*   2918*   2919*   2929    2931    2945*   2946*
                    2947*   2960    2990*   2993    3007    3016    3027*   3030*   3033*   3036*   3040    3048    3064*
                    3097*   3120*   3152*   3180*   3208#   3360*   3383*   3384    3385*   3387    3388    3389*   3391
                    3393    3395    3401    3403*   3405*   3413*   3417    3421    3422    3426    3442*   3443*   3444*
                    3445*   3446*   3448    3451*   3459*   3460    3462    3463*   3465    3466    3467    3484*   3485*
                    3486    3493*   3496*   3497*   3501*   3502*   3506    3509*   3513    3515    3517    3518*   3525
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                        3527    3529*   3530    3532*   3533*   3534*   3535*   3536*   3551*   3552*   3555*   3556*   3557
                        3561*   3562*   3563    3566    3568    3570*   3573*   3584    3595    3596*   3597*   3598*   3634*
                        3635    3636    3637*   3642*   3643*   3644*   3650    3675    3676    3677    3678*   3679*   3694*
                        3695    3705*   3706*   3736*   3737*   3738*   3739*   3740*   3741*   3742*   3743    3751*   3755
                        3756    3757    3758    3759    3760    3761    3766*
STACK = 001100           570*   1000    1221    1244    1267    1290    1313    1336    3064    3097    3120    3152    3180
                        3208
START   002234          1156    1159*   2741
STKLMT= 177774           581*
SWR     001140           787     805     859*    998    1020*   1022    1028*   1042    1195    2761    2775    2777    2783
                        2790    2831    2838    2843    2847    3247    3251    3253    3260    3264    3266    3318    3353
                        3355    3480    3517*   3742    3755*
SWREG   000176           725*   1028    1042    1195    3247    3260    3266    3480    3493
SW0     = 000001         634*
SW00    = 000001         624*    634
SW01    = 000002         623*    633
SW02    = 000004         622*    632
SW03    = 000010         621*    631
SW04    = 000020         620*    630
SW05    = 000040         619*    629
SW06    = 000100         618*    628
SW07    = 000200         617*    627
SW08    = 000400         616*    626
SW09    = 001000         615*    625
SW1     = 000002         633*
SW10    = 002000         614*
SW11    = 004000         613*
SW12    = 010000         612*
SW13    = 020000         611*
SW14    = 040000         610*
SW15    = 100000         609*
SW2     = 000004         632*
SW3     = 000010         631*
SW4     = 000020         630*
SW5     = 000040         629*
SW6     = 000100         628*
SW7     = 000200         627*
SW8     = 000400         626*
SW9     = 001000         625*
TACS    =%000004         712*    787*    798*    799*    800     802*    803     807     820*    821*    822     824*    825
                         829    1162*   1202*   1203*   1204    1223*   1229    1269*   1275    1362    1371    1380    1389
                        1398    1407    1416    1425    1434    1443    1452    1466*   1467    1471*   1472    1480*   1481
                        1486    1493*   1494    1498*   1499    1507*   1508    1513    1520*   1521    1525*   1526    1534*
                        1535    1540    1547*   1548    1552*   1553    1561*   1562    1567    1574*   1575    1579*   1580
                        1588*   1589    1594    1601*   1602    1606*   1607    1615*   1616    1621    1629*   1632    1638*
                        1656*   1657    1666*   1667    1676*   1677*   1678    1687*   1688    1697*   1698    1715    1720*
                        1721    1735    1740*   1741    1755    1760*   1761    1775    1780*   1781    1795    1800*   1801
                        1815    1820*   1821    1835    1840*   1841    1855    1860*   1861    1875    1880*   1881    1898*
                        1900    1909*   1910*   1919*   1920    1924    1932*   1933    1936*   1937    1945*   1946    1950
                        1962*   1963    1966*   1967    1970*   1971    1974*   1975    1978*   1979    1982*   1983    1986*
                        1987    1990*   1991    1994*   1995    2011*   2014*   2015    2021    2024    2036*   2039*   2040
                        2046    2049    2060*   2062*   2063    2075*   2077*   2078    2090*   2092*   2094    2101*   2102
                        2119*   2121*   2123    2130*   2131    2142*   2143*   2145    2148    2151*   2153    2169*   2170*
                        2172*   2189*   2190*   2192    2195*   2197    2203    2216*   2218*   2221*   2222*   2223    2228*
                        2229*   2231    2234    2244*   2246*   2247    2259*   2261*   2262    2274*   2276*   2277    2289*
                        2291*   2292    2304*   2306*   2307    2319*   2321*   2322    2335*   2337*   2340*   2341*   2342
```

DZTAAC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
                        2347*  2348*  2350   2356   2359   2370*  2372*  2375*  2376*  2377   2382*  2383*  2385
                        2388   2399*  2401*  2404*  2405*  2406   2411*  2412*  2414   2417   2428*  2430*  2433*
                        2434*  2435   2440*  2441*  2443   2446   2457*  2459*  2462*  2463*  2464   2469*  2470*
                        2472   2475   2486*  2488*  2491*  2492*  2493   2498*  2499*  2501   2504   2514*  2515*
                        2516   2534*  2536*  2538*  2541*  2542*  2546   2549*  2553   2557   2561*  2562   2566
                        2577*  2579*  2581*  2583*  2589*  2591*  2593*  2596   2600*  2601   2630*  2631*  2633*
                        2636*  2646*  2656*  2657*  2659*  2662*  2672*  2682*  2683*  2685*  2688*  2698*  2706*
                        2707*  2824   2904   2906   2932   2934   3065*  3070*  3071*  3072   3074*  3076   3098*
                        3103*  3104*  3105   3108   3121*  3126*  3127*  3128   3131   3153*  3158*  3159*  3160
                        3162*  3164   3167   3181*  3186*  3187*  3188   3191   3193*  3195   3209*  3214*  3215*
                        3216   3218*  3220   3233*  3234*  3236   3279*  3281   3287*  3297*  3299   3308*  3310
TACSH   001210           883*  1315*  1321   1899*  1911   1923*  3000*  3001*
TACSL   001206           882*  1088   1162   2997*  3000   3027   3065   3098   3121   3153   3181   3209   3340
                        3847
TADB  =%000005           713*   805*   827   1163*  1246*  1252   1292*  1298   1949*  2354   2556*  2585*  2587*
                        2595   2611   2618*  2619   2638*  2640   2664*  2666   2690*  2692   2825   3066*  3099*
                        3122*  3154*  3182*  3210*  3285*  3303
TADBH   001214           885*  1338*  1344   3003*  3004*
TADBL   001212           884*  1163   2999*  3003   3030   3066   3099   3122   3154   3182   3210
TAPRIO  001222           887*  3025*  3036
TAVEC   001216           886*   985   1159*  1160*  3011*  3013*  3033
TBITVE= 000014           667*
TDRV    002366          1177   1179*
TIMERR= 002000           694*
TKVEC = 000060           674*
TPVEC = 000064           675*
TRAPVE= 000034           673*  1006*  1007*
TRTVEC= 000014           668*
TR.REQ= 000200           697*
TST1    002514          1201   1219*
TST10   003316          1363   1368*
TST100  007070          2278   2285*
TST101  007132          2293   2300*
TST102  007174          2308   2315*
TST103  007236          2323   2330*
TST104  007370          2333   2360   2365*
TST105  007504          2368   2389   2394*
TST106  007620          2397   2418   2423*
TST107  007734          2426   2447   2452*
TST11   003340          1372   1377*
TST110  010050          2455   2476   2481*
TST111  010164          2484   2505   2510*
TST112  010224          2529*
TST113  010374          2532   2567   2572*
TST114  010534          2575   2608*
TST115  010554          2612   2617*
TST116  010570          2620   2625*
TST117  010674          2651*
TST12   003362          1381   1386*
TST120  011000          2677*
TST121  011102          2703*
TST13   003404          1390   1395*
TST14   003426          1399   1404*
TST15   003450          1408   1413*
TST16   003472          1417   1422*
TST17   003514          1426   1431*
```

TST2	002610	1242#												
TST20	003536	1435	1440#											
TST21	003560	1444	1449#											
TST22	003602	1453	1465#											
TST23	003634	1473	1478#											
TST24	003672	1487	1492#											
TST25	003724	1500	1505#											
TST26	003762	1514	1519#											
TST27	004014	1527	1532#											
TST3	002704	1265#												
TST30	004052	1541	1546#											
TST31	004104	1554	1559#											
TST32	004142	1568	1573#											
TST33	004174	1581	1586#											
TST34	004232	1595	1600#											
TST35	004264	1608	1613#											
TST36	004322	1622	1627#											
TST37	004370	1628	1653#											
TST4	003000	1288#												
TST40	004414	1658	1663#											
TST41	004440	1668	1673#											
TST42	004470	1679	1684#											
TST43	004514	1689	1694#											
TST44	004540	1699	1712#											
TST45	004606	1724	1732#											
TST46	004654	1744	1752#											
TST47	004722	1764	1772#											
TST5	003074	1311#												
TST50	004770	1784	1792#											
TST51	005036	1804	1812#											
TST52	005104	1824	1832#											
TST53	005152	1844	1852#											
TST54	005220	1864	1872#											
TST55	005266	1884	1895#											
TST56	005320	1901	1906#											
TST57	005352	1912	1917#											
TST6	003174	1334#												
TST60	005412	1918	1925	1930#										
TST61	005450	1931	1938	1943#										
TST62	005506	1944	1951	1961#										
TST63	005642	1996	2006#											
TST64	005742	2010	2025	2031#										
TST65	006042	2035	2050	2056#										
TST66	006104	2064	2071#											
TST67	006146	2079	2086#											
TST7	003274	1359#												
TST70	006236	2114#												
TST71	006332	2117	2132	2137#										
TST72	006424	2140	2164#											
TST73	006504	2167	2185#											
TST74	006606	2211#												
TST75	006722	2214	2235	2240#										
TST76	006764	2248	2255#											
TST77	007026	2263	2270#											
TYPE =	104401	1038	1157	1169	1180	1185	1186	2731	2833	2841	2863	2872	2874	2877
		2879	2883	2891	2957	2979	2991	3005	3014	3026	3029	3032	3035	3038

DZTAAC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
                        3045    3047    3396    3491    3492    3495    3508    3519    3538    3587    3590    3594    3669
                        3717*   3764
TYPERR  011676          2840    2863*
TYPOC = 104402          2888    3028    3031    3034    3037    3494    3718*
TYPON = 104404          3720*
TYPOS = 104403          3719*
UNIT  = 000400           696*   1178    1920    1933    1946    1950    3324    3344
WAITRE= 104412          2061    2076    2091    2105    2120    2144    2152    2171    2173    2191    2207    2217    2219
                        2230    2245    2260    2275    2290    2305    2320    2336    2338    2355    2371    2373    2384
                        2400    2402    2413    2429    2431    2442    2458    2460    2471    2487    2489    2500    2519
                        2535    2537    2539    2565    2578    2580    2582    2590    2592    2604    2632    2634    2647
                        2658    2660    2673    2684    2686    2699    2708    3075    3163    3194    3219    3235    3288
                        3309    3728*
WAITXF= 104413          2560    2584    2586    2588    2594    2599    2637    2639    2663    2665    2689    2691    3280
                        3298    3729*
WAIT.F  012120          2926*   3729
WAIT.0  012014          2898*   3728
WAIT1   012044          2904*   2912    2915
WAIT2   012064          2899*   2911*
WAIT3   012100          2905    2909    2917*
WAIT4   012062          2907    2910*
WFG   = 000000           678*   1966    2039    2077    2121    2151    2172    2222    2229    2538    2581    2633    2659
                        2685    3074    3162
WFGSUB  012622           731    3064*   3068    3079
WGBLOP  013060          3152*   3156    3170
WGPBLK  013054           734    3151*
WLOOP   012712          3097*   3101    3111
WRITE = 000002           679*    802    1677    1970    2246    2341    2348    2542    2583    2636    2662    2688    3279
WRTBLK  013504          3107    3166    3278*
WRTLOC= 010000           692*   3351
WRTSUB  012706           732    3096*
$AUTOB  001134           856*   1046*   3488    3609
$BDAOR  001122           851*   1229*   1252*   1275*   1298*   1321*   1344*   3846
$BDDAT  001126           853*   2827*   3843
$BELL   001172           875*   2833    2859
$CHARC  014212          3398*   3408*   3415    3424*   3429*
$CKSWR  014320          3480*   3724
$CMTAG  001100           839*    995     996    1004    1010    1011    1012
$CM1  = 000002           871*    872*    873*
$CM2  = 000004           871*    872*    873*
$CM3  = 000002           869*    871
$CNTLG  015045          3491    3604*
$CNTLU  015040          3508    3603*
$CRLF   001177           877*   1186    2841    2859    2863    2874    2879    2883    3397    3432    3519    3603
$DDAGN  011210           727    2733    2739*
$ENDAD  011200          1036    1101    1151    2735*   2854
$ENDCT  011160          1010    2729*
$ENDMG  011217          2731    2743*
$ENULL  011214          2742*
$EOP    011124          1233    1256    1279    1302    1325    1348    2719*
$EOPCT  011152          1010*   2726*   2730
$ERFLG  001103           842*   2750    2779    2781    2787*   2808    2828*   2859
$ERMAX  001115           848*   1013*   2781    2803*   2808
$ERROR  011504          1004    2822*
$ERPRC  001116           849*   2835*   2836*   2837    2859    3840    3841    3843    3845    3846    3847    3849
$ERRTB  001236           906*   2870
```

```
$ERTTL  001112            846#  2834*  2859
$ESCAP  001170            874#  1012*  1628*  1918*  1931*  1944*  2010*  2035*  2088*  2117*  2140*  2187*  2206*
                         2214*  2333*  2368*  2397*  2426*  2455*  2484*  2532*  2575*  2629*  2654*  2680*  2802*
                         2850   2852   2859
$FILLC  001156            867#  3401   3432
$FILLS  001155            866#  3432
$GDADR  001120            850#
$GDDAT  001124            852#  2826*  3843
$GET42  011170           2732#
$GTSWR  014370           3492#  3722
$HD   = 000000            507
$HIOCT  014316           3464*  3469#
$ICNT   001104            843#  2794*  2795   2797*  2807
$ILLUP  015552           3734   3750   3769#
$INTAG  001135            857#  3520   3609
$ITEMB  001114            847#  2837*  2859   2865
$LF     001200            878#  2859   3432   3594   3603
$LPADR  001106            844#  1014*  1360*  1369*  1378*  1387*  1396*  1405*  1414*  1423*  1432*  1441*  1450*
                         1654*  1664*  1674*  1685*  1695*  1713*  1733*  1753*  1773*  1793*  1813*  1833*  1853*
                         1873*  1896*  1907*  2008*  2033*  2116*  2139*  2213*  2332*  2367*  2396*  2425*  2454*
                         2483*  2512*  2531*  2574*  2609*  2627*  2653*  2679*  2785*  2800*  2805   2807
$LPERR  001110            845#  1015*  2785   2801*  2807   2849   3068*  3101*  3124*  3156*  3184*  3212*  3232*
$MAIL = ****** U         1032   1042   2800   2843   3385
$MNEW   015063           3495   3607#
$MSWR   015052           3492   3605#
$MXCNT  011502           2798   2807#
$NULL   001154            865#  3403   3432
$NWTST= 000001           1216#  1239#  1262#  1285#  1308#  1331#  1356#  1365#  1374#  1383#  1392#  1401#  1410#
                         1419#  1428#  1437#  1446#  1462#  1475#  1489#  1502#  1516#  1529#  1543#  1556#  1570#
                         1583#  1597#  1610#  1624#  1650#  1660#  1670#  1681#  1691#  1709#  1729#  1749#  1769#
                         1789#  1809#  1829#  1849#  1869#  1892#  1903#  1914#  1927#  1940#  1958#  2003#  2028#
                         2053#  2068#  2083#  2111#  2134#  2161#  2182#  2208#  2237#  2252#  2267#  2282#  2297#
                         2312#  2327#  2362#  2391#  2420#  2449#  2478#  2507#  2526#  2569#  2605#  2614#  2622#
                         2648#  2674#  2700#
$OCNT   015316           3641*  3670*  3683#
$OMODE  015320           3636*  3640*  3645   3648*  3659*  3685#
$OVER   011466           2762   2778   2786   2796   2804#
$PASS   001100            840#  1164   2166   2723*  2724*  2742   2792   2808
$POWER  015560           3765   3772#
$PWRAD  015546           3767#
$PWRDN  015406           1008   3734#  3762
$PWRMG  015542           3765#
$PWRUP  015460           3744   3750#
$QUES   001176            876#  2859   2979   3045   3432   3538   3587   3603
$RDCHR  014602           3551#  3725
$RDDEC= ****** U         3728
$RDLIN  014722           3579#  3726
$RDOCT  014216           3442#  3727
$RDSZ = 000010           3572#
$REGAD  001160            869#
$REGO   001162            871#  2824*  3840   3841   3843
$REG1   001164            872#  2825*  3845
$RTNAD  011212           2741#
$R2A  = ****** U         3728
$SAVRE= ****** U         3728
$SAVR6  015556           3743*  3751   3752*  3753*  3771#
```

```
$SCOPE  011232          1002    2759#
$SETUP= 000137           981#   1001    1002    1004    1006    1008    1010    1011    1012    1014    1036    1039    2721
                        2760    2823    2846    2854    3475    3609
$STUP = 177777           981#
$SVLAD  011440          2770    2799#
$SWR  = 167400           497#    507     558     559     560     561     562     563     564     673     874     875    1011
                        1012    1014    1015    1220    1243    1266    1289    1312    1335    1360    1369    1378    1387
                        1396    1405    1414    1423    1432    1441    1450    1466    1479    1493    1506    1520    1533
                        1547    1560    1574    1587    1601    1614    1628    1654    1664    1674    1685    1695    1713
                        1733    1753    1773    1793    1813    1833    1853    1873    1896    1907    1918    1931    1944
                        1962    2007    2032    2057    2072    2087    2115    2138    2165    2186    2212    2241    2256
                        2271    2286    2301    2316    2331    2366    2395    2424    2453    2482    2511    2530    2573
                        2609    2618    2626    2652    2678    2704    2714    2722    2734    2740    2742    2751    2752
                        2753    2754    2755    2761    2773    2775    2776    2779    2780    2781    2788    2789    2790
                        2801    2804    2807    2814    2815    2816    2817    2818    2831    2838    2843    2847    2859
                        3768
$SWRMK= 000000           564     565    2755    2756    2777
$TIMES  001166           873#   1011*   1220*   1243*   1266*   1289*   1312*   1335*   1479*   1506*   1533*   1560*   1587*
                        1614*   2007*   2032*   2057*   2072*   2087*   2115*   2138*   2165*   2186*   2212*   2241*   2256*
                        2271*   2286*   2301*   2316*   2331*   2366*   2395*   2424*   2453*   2482*   2511*   2530*   2573*
                        2626*   2652*   2678*   2704*   2722*   2788*   2795    2798*   2807
$TKB    001146           862#   3473    3484    3501    3555    3561
$TKS    001144           861#   3473    3482    3498    3522*   3553    3559
$TN   = 000126           497#    507    1216    1220#   1239    1243#   1262    1266#   1285    1289#   1308    1312#   1331
                        1335#   1356    1360#   1363    1365    1369#   1372    1374    1378#   1381    1383    1387#   1390
                        1392    1396#   1399    1401    1405#   1408    1410    1414#   1417    1419    1423#   1426    1428
                        1432#   1435    1437    1441#   1444    1446    1450#   1453    1462    1466#   1473    1475    1479#
                        1487    1489    1493#   1500    1502    1506#   1514    1516    1520#   1527    1529    1533#   1541
                        1543    1547#   1554    1556    1560#   1568    1570    1574#   1581    1583    1587#   1595    1597
                        1601#   1608    1610    1614#   1622    1624    1628#   1650    1654#   1658    1660    1664#   1668
                        1670    1674#   1679    1681    1685#   1689    1691    1695#   1699    1709    1713#   1724    1729
                        1733#   1744    1749    1753#   1764    1769    1773#   1784    1789    1793#   1804    1809    1813#
                        1824    1829    1833#   1844    1849    1853#   1864    1869    1873#   1884    1892    1896#   1901
                        1903    1907#   1912    1914    1918#   1925    1927    1931#   1938    1940    1944#   1951    1958
                        1962#   1996    2003    2007#   2010    2025    2028    2032#   2035    2050    2053    2057#   2064
                        2068    2072#   2079    2083    2087#   2111    2115#   2117    2132    2134    2138#   2140    2161
                        2165#   2167    2182    2186#   2208    2212#   2214    2235    2237    2241#   2248    2252    2256#
                        2263    2267    2271#   2278    2282    2286#   2293    2297    2301#   2308    2312    2316#   2323
                        2327    2331#   2333    2360    2362    2366#   2368    2389    2391    2395#   2397    2418    2420
                        2424#   2426    2447    2449    2453#   2455    2476    2478    2482#   2484    2505    2507    2511#
                        2526    2530#   2532    2567    2569    2573#   2575    2605    2609#   2612    2614    2618#   2620
                        2622    2626#   2648    2652#   2674    2678#   2700    2704#
$TPB    001152           864#   3421*   3432
$TPFLG  001157           868#   3379    3432
$TPS    001150           863#   3419    3432
$TRAP   015322          1006    3694#
$TRAP2  015344          3705#   3716
$TRP  = 000014          3709#   3718#   3719#   3720#   3721#   3722    3723#   3724    3725#   3726#   3727#   3728#   3729#
                        3730#
$TRPAD  015356          3699    3716#
$TSTNM  001102           841#   1173*   2721*   2750    2777    2799*   2804    2808    2830    2859
$TTYIN  015030          3580    3581    3598    3602#
$TYPBN= ****** U        3721
$TYPDS= ****** U        3721
$TYPE   013776          3379#   3709    3717
$TYPEC  014146          3400    3407    3414    3419#   3420    3524
```

H08

DZTAAC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

```
$TYPEX  014214            3425    3427    3430#
$TYPOC  015120            3639#   3718
$TYPON  015134            3638    3641#   3720
$TYPOS  015074            3634#   3719
$XTSTR  011244            2764#
$$GET4= 000000            2734#
$OFILL  015317            3635*   3639*   3649    3684#
$40CAT= ****** U          2761    2840
.       = 016442           719#    723#    785#    795#    817#    838#    879     999    1014    1015    1050#   1172#   1183#
                          2155    2742    2745    2807    2808    2859    2894#   3432    3473    3602#   3603    3609    3746
                          3770    3839#
```

```
$INIT    717#  1475  1502  1529  1556  1583  1610
BITBAN   717#  1462  1489  1516  1543  1570  1597
BITCHK   717#  1356  1365  1374  1383  1392  1401  1410  1419  1428  1437  1446  1650  1660  1670
        1681  1691
BTOGGL   717#  1462  1489  1516  1543  1570  1597
CLERR    717#  2208  2327  2362  2391  2420  2449  2478
COMMEN     1#   677#   717#  3056  3080  3112  3134  3171  3198  3224  3240  3273  3290  3314
ENDCOM     1#   677#
ERROR    571#  1095  1145  1230  1253  1276  1299  1322  1345  1364  1373  1382  1391  1400  1409
        1418  1427  1436  1445  1454  1469  1474  1483  1488  1496  1501  1510  1515  1523  1528
        1537  1542  1550  1555  1564  1569  1577  1582  1591  1596  1604  1609  1618  1623  1636
        1659  1669  1680  1690  1700  1725  1745  1765  1785  1805  1825  1845  1865  1885  1902
        1913  1922  1926  1935  1939  1948  1952  1965  1969  1973  1977  1981  1985  1989  1993
        1997  2023  2026  2048  2051  2067  2082  2099  2104  2128  2133  2147  2150  2156  2194
        2202  2205  2233  2236  2251  2266  2281  2296  2311  2326  2358  2361  2387  2390  2416
        2419  2445  2448  2474  2477  2503  2506  2518  2548  2555  2559  2564  2568  2598  2603
        2613  2621  2643  2669  2695  2908  2916  2936  2944  3306  3312
ESCAPE     1#   677#  1628  1918  1931  1944  2010  2035  2088  2117  2140  2187  2214  2333  2368
        2397  2426  2455  2484  2532  2575  2628  2654  2680
GETPRI     1#   677#
GETSWR     1#   677#  1039#
JUMP     717#
MORETA   717#   880
MULT       1#   677#
NEWTST     1#   677#  1216  1239  1262  1285  1308  1331  1356  1365  1374  1383  1392  1401  1410
        1419  1428  1437  1446  1462  1475  1489  1502  1516  1529  1543  1556  1570  1583  1597
        1610  1624  1650  1660  1670  1681  1691  1709  1729  1749  1769  1789  1809  1829  1849
        1869  1892  1903  1914  1927  1940  1958  2003  2028  2053  2068  2083  2111  2134  2161
        2182  2208  2237  2252  2267  2282  2297  2312  2327  2362  2391  2420  2449  2478  2507
        2526  2569  2605  2614  2622  2648  2674  2700
POP        1#   677#  3465  3755  3756
PUSH       1#   677#  3444  3736  3742
RDONLY   717#  1706  1726  1746  1766  1786  1806  1826  1846  1866
READYC   717#  2053  2068  2237  2252  2267  2282  2297  2312
READYI   717#  2106
READYS   717#  2003  2028
REGADR   717#  1212  1235  1258  1281  1304  1327
REPORT     1#   677#
ROMERR   717#  1966  1970  1974  1978  1982  1986  1990  1994
SAVE     717#  2824
SCOPE    572#  1219  1242  1265  1288  1311  1334  1359  1368  1377  1386  1395  1404  1413  1422
        1431  1440  1449  1465  1478  1492  1505  1519  1532  1546  1559  1573  1586  1600  1613
        1627  1653  1663  1673  1684  1694  1712  1732  1752  1772  1792  1812  1832  1852  1872
        1895  1906  1917  1930  1943  1961  2006  2031  2056  2071  2086  2114  2137  2164  2185
        2211  2240  2255  2270  2285  2300  2315  2330  2365  2394  2423  2452  2481  2510  2529
        2572  2608  2617  2625  2651  2677  2703  2720
SETPRI     1#   677#
SETTRA  3709#  3718  3719  3720  3722  3724  3725  3726  3727  3728  3729
SETUP      1#   677#   993
SKIP       1#   677#  1363  1372  1381  1390  1399  1408  1417  1426  1435  1444  1453  1473  1487
        1500  1514  1527  1541  1554  1568  1581  1595  1608  1622  1658  1668  1679  1689  1699
        1724  1744  1764  1784  1804  1824  1844  1864  1884  1901  1912  1925  1938  1951  1996
        2025  2050  2064  2079  2132  2167  2235  2248  2263  2278  2293  2308  2323  2360  2389
        2418  2447  2476  2505  2567  2612  2620
S_ASH      1#   677#   706   715   739   744   970  1206  1211  1351  1355  1456  1461  1642  1649
        1701  1705  1887  1891  1998  2002  2178  2181  2520  2524  3050  3054
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STARS       1#   507   553   566   677#   686   780   783   791   794   812   815   834   879   972
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         1264  1282  1285  1287  1305  1308  1310  1328  1331  1333  1356  1358  1365  1367  1374
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         1545  1556  1558  1570  1572  1583  1585  1597  1599  1610  1612  1624  1626  1650  1652
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         1749  1751  1766  1769  1771  1786  1789  1791  1806  1809  1811  1826  1829  1831  1846
         1849  1851  1866  1869  1871  1892  1894  1903  1905  1914  1916  1927  1929  1940  1942
         1955  1958  1960  2003  2005  2028  2030  2053  2055  2068  2070  2083  2085  2106  2111
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         2449  2451  2478  2480  2507  2509  2526  2528  2569  2571  2605  2607  2614  2616  2622
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         3732  3748
SUBSET    717#  3064  3097  3120  3152  3180  3208
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TRMTRP   3709#
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TYPDEC      1#   677#
TYPNAM      1#   677#  1032
TYPNUM      1#   677#
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TYPOCT      1#   677#  2885  3027  3030  3033  3036  3493
TYPTXT      1#   677#  1169  1179
WRTBLK    717#
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          1869  1892  1903  1914  1927  1940  1958  2003  2028  2053  2068  2083  2111  2134  2161
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.HEADE      1#   497#
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.SWRLO    565#
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CROSS REFERENCE TABLE -- MACRO NAMES

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.$MULT      1#
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.$SB2O      1#
.$SCOP      1#    497#   2745
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.$SPAC    497#
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.1170       1#
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DZTAAC.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

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        2958  3245  3258  3320  3341  3449  3450  3496  3497  3651  3732
CLRB    1136  1141  1269  1292  1315  1338  1899  1910  2556  2787  3398  3424  3593
CMP      985   998  1022  1036  1042  1091  1152  1195  1226  1249  1272  1295  1318  1341  1634
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        3018  3041  3043  3247  3260  3266  3480  3486  3506  3513  3525  3527  3557  3563  3566
        3568  3581
CMPB     983  1139  1176  2641  2667  2693  2777  2781  2964  2968  2972  3304  3322  3342  3353
        3355  3391  3393  3401  3422  3426  3488  3520  3585  3591
COM     1717  1737  1757  1777  1797  1817  1837  1857  1877
DEC     1063  1066  2019  2044  2725  2866  2913  2941  3283  3301
DECB    3405  3408  3659  3670
EMT      571
HALT     723  1194  2845  2856  3078  3110  3169  3222  3238  3246  3259  3265  3381  3745  3769
INC     1034  1090  1133  2017  2042  2175  2195  2352  2549  2723  2794  2834  2910  2938  3001
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INCB    2096  2125  2199  2696  2799  2828  3428
IOT      572
JMP      727   728   729   730   731   732   733   734   735   736   737  1101  1151  1233  1256
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JSR     1065  1068  1125  1129  1134  2735  2840  3069  3096  3102  3107  3125  3130  3151  3157
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MOV      787   798   805   820   827   982   988   990   992   996  1000  1002  1003  1004  1005
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        1062  1086  1092  1096  1099  1124  1137  1138  1146  1149  1154  1155  1158  1159  1161
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        1313  1314  1317  1319  1320  1321  1324  1326  1335  1336  1337  1340  1342  1343  1344
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        1949  1962  2007  2008  2010  2011  2013  2032  2033  2035  2036  2038  2057  2059  2060
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        2165  2169  2186  2187  2189  2212  2213  2214  2216  2220  2221  2228  2241  2243  2244
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DZTAAC.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

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NEG     3646
NOP     2736  2737  2738
RESET    797   819  1361  1370  1379  1388  1397  1406  1415  1424  1433  1442  1451  1485  1512
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        2734  3067  3100  3123  3155  3183  3211  3231
ROL     2176  2177  3454  3456  3458  3652  3654  3655  3656  3658
RTI     1027  2806  2858  2920  2948  3390  3468  3523  3571  3599  3680  3707  3768
RTS     2884  2983  3049  3270  3289  3313  3329  3361  3430  3700
SUB     2174  2836  2902  2930
SWAB    3020
TRAP    3709  3718  3719  3720  3722  3724  3725  3726  3727  3728  3729
TST     1040  1088  1093  1097  1142  1147  1164  1167  1191  1200  1967  1971  1975  1979  1983
        1987  1991  1995  2145  2166  2231  2356  2385  2414  2443  2472  2501  2566  2595  2768
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.ASCIZ   875   878  1050  1172  1183  2743  2893  3603  3604  3605  3607  3772  3775  3777  3773
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.BLKB   3602
.BYTE    841   842   847   848   856   857   865   866   867   868  2742  3600  3601  3681  3682
        3683  3684
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.ENDC    502   510   554   561   563   564   565   567   571   663   677   687   709   717   728
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         876   880   892   972   973   980   981  1000  1001  1004  1006  1008  1010  1011  1012
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DZTAAC.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

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	1931	1932	1939	1941	1942	1943	1944	1945	1952	1956	1959	1960	1961	1962	1970
	1974	1978	1982	1986	1990	1994	1996	1997	1998	2000	2003	2004	2005	2006	2007
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	2283	2284	2285	2286	2287	2294	2298	2299	2300	230	2302	2309	2313	2314	2315
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	2456	2471	2477	2479	2480	2481	2482	2483	2484	2485	2500	2506	2508	2509	2510
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	2763	2774	2777	2778	2779	2781	2783	2790	2794	2799	2800	2804	2807	2808	2811
	2814	2828	2835	2840	2841	2842	2843	2854	2858	2859	2861	2896	2924	2950	2986
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	3695	3698	3717	3718	3719	3720	3721	3722	3723	3724	3725	3726	3727	3728	3729
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E09

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F09

Spooler runtime 17 Seconds, 21 KCS, 456 disk reads, 4 disk writes, 108 pages