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IDENTIFICATION

PRODUCT ID: AC-T781A-MC

PRODUCT TITLE: CZTKHA TK25 FRT END FUNC 04

PRODUCT DATE: MARCH, 1984

DEPARTMENT: TAPE DIAGNOSTIC ENGINEERING

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1.0 ABSTRACT

THIS IS A PDP-11/LSI RESIDENT DIAGNOSTIC WHICH CHECKS THE FUNCTIONALITY OF AN TK25 MAGTAPE SUBSYSTEM WHILE CONNECTED TO A PDP-11 SYSTEM (Q-BUS OR UNIBUS). THE PROGRAM HAS BEEN DIVIDED INTO FOUR MAJOR PIECES: CZTKE, CZTKF, CZTKG, CZTKH. SUCCESSFUL RUN EXAMPLES, AND TEST DESCRIPTIONS HAVE BEEN PROVIDED FOR EACH PROGRAM.

THE PROGRAMS PROVIDE ERROR MESSAGES WHICH IDENTIFY FAILING FUNCTIONS, AND AID IN DEVICE REPAIR. REFERENCE THE FOLLOWING DIGITAL EQUIPMENT DOCUMENTS:

1. CIQPMAO XXDP+ PROGRAMMER'S MANUAL; DOCUMENT NUMBER AC-S296A-AC; DATE: 14 JULY 1980.

1.1 REVISION HISTORY

NEW RELEASE APRIL 1984

2.0 REQUIREMENTS

2.1 HARDWARE REQUIREMENTS

PDP-11 FAMILY PROCESSOR WITH 32K WORDS OF MEMORY
TK25 MAGTAPE SUBSYSTEM (DRIVE AND CONTROLLER)
CAUTION:DIAGNOSTIC REQUIRES 32K WORDS OF MEMORY
(28K USEABLE I.E. 4K FOR I/O PAGE)

2.1.1 OPTIONAL HARDWARE -

FOUR TK25 CONTROLLERS PER PDP-11, ONE
DRIVE PER CONTROLLER

2.2 SOFTWARE REQUIREMENTS

PDP-11 DIAGNOSTIC SUPERVISOR (CIQPMAO VERSION 34 OR LATER)
PDP-11 DIAGNOSTIC LOADER/MONITOR (XXDP+)

2.3 PREREQUISITES

FUNCTIONAL PDP-11/LSI FAMILY CENTRAL PROCESSOR AND MEMORY
FUNCTIONAL CONSOLE TERMINAL
FUNCTIONAL STANDALONE DIAGNOSTIC SUPERVISOR

3.0 OPERATING INSTRUCTIONS - OPERATOR COMMANDS

3.1 OPERATOR COMMANDS

THE TK25 DIAGNOSTICS ARE PDP-11 DIAGNOSTIC SUPERVISOR COMPATIBLE PROGRAMS. ALL LOADING AND RUN TIME INSTRUCTIONS CAN BE REFERENCED IN THE PDP-11 PROGRAMMER'S MANUAL "CIQPMAO XXDP" PROGRAMMER'S MANUAL NUMBER AC-S296A-AC.

BOOT THE DIAGNOSTIC XXDP+ MEDIA (OPERATOR RESPONSES ARE UNDERLINED)

```
CHMDLEO XXDP+ DL MONITOR
BOOTED VIA UNIT 0
28K NON-UNIBUS SYSTEM

ENTER DATE <DD-MMM-YY>: 29-JAN-82

RESTART ADDRESS: 152010
THIS IS XXDP+ TYPE "H" OR "H/L" FOR HELP.

.R CZTKHA

CZTKHA.BIC

DRS-EO
CZTKH-A-0
CZTKHA TK-25 FRT END FUNC Ø4 UNIT IS TK25
RSTRT ADR 147642
DR>START/FLAG:PNT:HOE
```

THE ABOVE COMMAND WILL START THE DIAGNOSTIC. THE COMMAND HAS TWO SWITCHES ON WHICH ARE "PRINT EACH TEST NBR. AS EXECUTED" AND "HALT ON ERROR".

3.2 HARDWARE PARAMETERS

AFTER INITIAL STARTING OF THE PROGRAM (START COMMAND TO THE DIAGNOSTIC SUPERVISOR), THE PROGRAM WILL ISSUE THE "CHANGE HW?" QUESTION TO ASK IF THE HARDWARE PARAMETERS ARE TO BE CHANGED (BY THE OPERATOR).

ON A "N" (NO) RESPONCE TO THE QUESTION, THE PROGRAM WILL USE IT'S DEFAULT HARDWARE PARAMETER VALUES. IT WILL DEFAULT TO ONE UNIT SELECTED (UNIT 0), THE DEFAULT TSBA/TSDB WILL BE 172522 AND THE INTERRUPT VECTOR WILL BE 224.

ON A "Y" (YES) RESPONSE TO THE QUESTION, THE FOLLOWING QUESTIONS WILL THEN BE ASKED TO ALLOW THE OPERATOR TO SELECT THE UNITS TO BE TESTED. A VALUE, IF PRESENT, LOCATED TO THE LEFT OF THE QUESTION MARK IS THE DEFAULT VALUE THAT WILL BE TAKEN ONLY IF A CARRIAGE RETURN IS TYPED AS A RESPONSE. A "(D)" IN A QUESTION INDICATES THAT A DECIMAL NUMBER IS REQUIRED AS A RESPONSE. AN "(O)" INDICATES AN OCTAL NUMBER IS BEING SOLICITED. AN "(L)" THAT A LOGICAL RESPONSE IS TO BE MADE: "Y" FOR YES, "N" FOR NO.

```
UNITS (D) ? < ENTER THE NUMBER OF CONTROLLERS
              PRESENT TO BE TESTED>


UNIT 0

DEVICE ADDRESS (O) 172522 ? <ENTER THE ADDRESS OF THE
                                TSBA/TSDB REGISTER>

VECTOR (O) 224 ?        <ENTER ADDRESS OF INTERRUPT
                        VECTOR>
```

THE ADDRESS AND VECTOR QUESTIONS WILL BE ASKED FOR EACH OF THE NUMBER OF UNITS (CONTROLLERS) SPECIFIED IN THE " UNITS ?" QUESTION. LOGICAL UNIT NUMBERS ARE ASSIGNED IN ORDER BEGINNING AT 0. UP TO FOUR UNITS CAN BE SELECTED FOR TESTING.

3.3 SOFTWARE PARAMETERS

THE
FOLLOWING QUESTIONS ARE ASKED ON A START, RESTART, OR CONTINUE. THEY
ALLOW FLEXIBILITY IN THE WAY THE PROGRAM BEHAVES.

```
CHANGE SW (L) ? < TYPE "Y" TO CAUSE THE FOLLOWING
                  QUESTIONS TO BE ASKED.>

INHIBIT ITERATIONS (L) N ? < TYPE "Y" TO PREVENT MULTIPLE
                             ITERATIONS OF CERTAIN TESTS.
                             THIS CAUSES EACH TEST PASS TO
                             RUN AS QUICKLY AS POSSIBLE.
                             ONLY QUICK-RUNNING LOGIC
                             TESTS USE MULTIPLE ITERATIONS.>

ENABLE CONTROLLER RAM DUMP ON ERROR (L) N? < TYPE "Y" TO DUMP
                             SELECTED RAM CONTENTS IN THE
                             CONTROLLER MODULE.>
```

NOTE

THE FOLLOWING QUESTION IS ONLY ASKED FOR THE
CZTKH DIAGNOSTIC.

```
INHIBIT EOT CHECKING (REDUCES RUN TIME BY 22 MINUTES) (L) N?
                             <THIS WILL SIGNAL THE DIAGNOSTIC
                             SKIP END OF TAPE CHECKING. IF THE
                             OPERATOR IS CONVINCED THAT THERE
                             IS NO PROBLEM WITH EITHER THE
                             TRACK SWITCHING CAPABILITY OR
                             THE EOT DETECTION MECHANISM, THIS
                             TEST MAY BE SKIPPED TO REDUCE RUN
                             TIME.>
```

4.0 OPERATING INSTRUCTIONS - SAMPLE PRINTOUTS

4.1 SUCCESSUL RUN EXAMPLES

4.1.1 SUCCESSFUL RUN EXAMPLE - CZTKH -

```
TST: 001 WRITE TAPE MARK RETRY TEST
TST: 002 SKIP TAPE MARKS TEST
TST: 003 NO-OP ("CLEAN TAPE") AND INITIALIZE TEST
TST: 004 ERASE AND OPERATION INCOMPLETE TEST
TST: 005 TEST OF OPERATIONS AT EOT TEST
CZTKH EOP 1
    0 TOTAL ERRS
```

NOTE: PROGRAM NOW STARTS OVER AGAIN AT TEST 1

4.2 OPERATING INSTRUCTIONS - SAMPLE ERROR MESSAGES

ERROR MESSAGE EXAMPLE 1

```
TST: 005 OPERATIONS AT EOT TEST
CZTKH HRD ERR 00517 ON UNIT 00 TST 005 SUB 001 PC:054200
UNABLE TO CLEAR EOT INIDICATION (XSTO) BIT 0

TSSR=000311
TSSR CONTENTS ARE AMBIGUOUS
TSSR BITS SET: SSR,OFL,BIT0
TERMINATION CLASS CODE=RECOVERABLE ERROR - TAPE
        POSITION ONE RECORD DOWN
*****CHECK TRANSPORT*****
PACKET ADDRESS=055510
PACKET WORD #0=140410
PACKET WORD #1=000003
PACKET WORD #2=000000
PACKET WORD #3=006654

MESSAGE BUFFER ADDRESS=055400
MESSAGE BUFFER CONTENTS;
MESSAGE BUFFER HEADER    =100020
DATA FIELD LENGTH        =000012
RESIDUAL BYTE COUNTER    =000000
XSTAT0 CONTENTS          =000311
XSTAT1 CONTENTS          =000000
XSTAT2 CONTENTS          =100000
XSTAT3 CONTENTS          =000040
```

ERROR MESSAGE EXAMPLE 2

```
CZTKH HRD ERR 00106 ON UNIT 00 TST 001 SUB 001 PC:024240
TSSR NOT CORRECT AFTER SPACE REVERSE DATA COMMAND

TSSR=100214
TSSR BITS SET: SC, SSR
TERMINATION CODE = UNRECOVERABLE ERROR
*****CHECK TRANSPORT*****
PACKET ADDRESS =026510
PACKET WORD 00 =141011
PACKET WORD 01 =065152
PACKET WORD 02 =000000
PACKET WORD 03 =000000

MESSAGE BUFFER ADDRESS  =026400
MESSAGE BUFFER CONTENTS:
MESSAGE BUFFER HEADER   =100022
DATA FIELD LENGTH       =000012
RESIDUAL BYTE COUNTER   =000000
XSTAT0 CONTENTS         =000312
XSTAT1 CONTENTS         =000000
XSTAT2 CONTENTS         =100000
XSTAT3 CONTENTS         =000141
```

ERROR MESSAGE EXAMPLE 3

```
CZTKH HRD ERR 00107 ON UNIT 00 TST 001 SUB 001 PC:024274
WRITE TAPE MARK RETRY AT BOT, FAILED TO SET NEF (XST0)

EXPD: 002312 RECV: 000312 XOR: 002000
```

5.0 PROGRAM RUN TIMES

THE AVERAGE RUN TIMES OF THE PROGRAMS ARE LISTED BELOW. THESE FIGURES ARE TO BE USED AS A GUIDE. THE TIMING WAS DONE ON A PDP-11/23 (LSI) PROCESSOR WITH A LA-120 CONSOLE.

THE PROGRAMS RUN IN NON-ITERATIVE MODE. EACH TEST IS RUN ONCE, WITH NO ITERATIONS. THEREFOR, THE DEFAULT MODE (NORMAL ITERATIVE) AND THE NON-ITERATIVE MODE TIMES ARE IDENTICAL.

5.1 RUN TIMES - CZTKH

TEST NUMBER	N/I SECS.	DEF SECS.
1	180	180
2	113	113
3	11	11
4	120	120
5	1320	1320

THE TIMES REQUIRED TO RUN TESTS 1 THROUGH 5 IN ONE COMMAND:

Q.V. 29 MINS 4 SECONDS
DEFAULT 29 MINS 4 SECONDS

9.0 TEST DESCRIPTIONS - CZTKH

6.1 TEST 1 - WRITE TAPE MARK RETRY

```
*************************************************************
* NOTE: THIS TEST MUST HAVE A GOOD MAGTAPE IN THE DRIVE     *
* ANY TAPE ERRORS WILL BE DISPLAYED AS A TAPE STATUS ALERT  *
*************************************************************
```

THIS TEST VERIFIES PROPER OPERATION OF THE WRITE TAPE MARK RETRY COMMAND
(SPACE REVERSE, ERASE, WRITE TAPE MARK). SUBTESTS ARE AS FOLLOWS:

6.1.1 TEST 1, SUBTEST 1: -

VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE TAPE IS
POSITIONED AT BOT CAUSES FUNCTION REJECT TERMINATION WITH THE
NON-EXECUTABLE (NEF) ERROR BIT SET.

6.1.2 TEST 1, SUBTEST 2: -

VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE TAPE IS
POSITIONED BEFORE THE FIRST RECORD, BUT NOT AT BOT, RESULTS IN TAPE STATUS
ALERT TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS BIT SET.

6.1.3 TEST 1, SUBTEST 3: -

VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND TERMINATES PROPERLY AND
WRITES THE TAPE MARK ONTO TAPE (BY ISSUING A READ REVERSE COMMAND AND
CHECKING FOR TAPE STATUS ALERT TERMINATION AND TMK=1).

6.1.4 TEST 1, SUBTEST 4: -

VERIFIES THAT THE SPACE-REVERSE PORTION OF THE WRITE TAPE MARK RETRY
OPERATION IS PERFORMED BY REWINDING THE TAPE, ISSUING SEVERAL WRITE TAPE
MARK RETRY COMMANDS IN SUCCESSION, THEN ISSUING TWO SP
ACE RECORDS REVERSE
COMMANDS IN SUCCESSION. THE SECOND SPACE RECORDS REVERSE COMMAND SHOULD
TERMINATE WITH REVERSE INTO BOT (RIB) STATUS SET.

6.2 TEST 2 - SKIP TAPE MARKS

```
*************************************************************
* NOTE: THIS TEST MUST HAVE A GOOD MAGTAPE IN THE DRIVE     *
* ANY TAPE ERRORS WILL BE DISPLAYED AS TAPE STATUS ALERT    *
*************************************************************
```

THIS TEST VERIFIES PROPER OPERATION OF THE SKIP TAPE MARKS FORWARD AND SKIP TAPE MARKS REVERSE COMMANDS. PROPER OPERATION UNDER CONTROL OF ALL COMBINATIONS OF THE ENABLE SKIP TAPE MARKS STOP (ESS) AND ENABLE TAPE MARKS STOP OFF BOT (ENB) BITS SPECIFIED BY THE WRITE CHARACTERISTICS COMMAND. THE TEST CONSISTS OF THE FOLLOWING SUBTESTS (FOR EACH SUBTEST, THE TAPE IS FIRST WRITTEN WITH AN APPROPRIATE SERIES OF DATA RECORDS, AND/OR TAPE MARKS, AND/OR DOUBLE TAPE MARKS).

6.2.1 TEST 2, SUBTEST 1: -

VERIFIES THAT A SKIP TAPE MARKS FORWARD COMMAND WITH A TAPE MARK COUNT OF 1 OPERATES PROPERLY. THE TAPE IS FIRST REWOUND AND THEN WRITTEN WITH SEVERAL "FILES"; EACH FILE CONSISTS OF A NUMBER OF DATA RECORDS FOLLOWED BY A TAPE MARK. EACH DATA RECORD CONTAINS THE FILE NUMBER AND THE RECORD NUMBER WITHIN THE FILE SO THAT TAPE POSITION CAN BE SUBSEQUENTLY VERIFIED BY READING THE DATA. THE TAPE IS AGAIN REWOUND AND A SERIES OF TAPE SKIP MARK COMMANDS ARE ISSUED AND THE RESULTS (TAPE STATUS ALERT TERMINATION, TMK=1, STATUS, TAPE POSITION VIA READ COMMAND) IS CHECKED. PRIOR TO ISSUANCE OF EACH SKIP COMMAND, A WRITE CHARACTERISTICS COMMAND IS ISSUED TO SET UP THE ESS AND ENB CONTROL BITS. ALL COMBINATIONS OF ESS AND ENB ARE USED (00,01,10,11) ; OPERATION SHOULD BE THE SAME IN EACH CASE FOR THIS SUBTEST.

6.2.2 TEST 2, SUBTEST 2: -

VERIFIES THAT SKIP TAPE MARKS COMMAND WITH A TAPE MARK COUNT GREATER THAN 1 OPERATES PROPERLY. COUNTS OF 2, 3, 8, 32, 64, 256, AND 512 ARE TESTED. THE TESTING SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.

6.2.3 TEST 2, SUBTEST 3: -

VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND ISSUED WHILE THE TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT TERMINATION WITH THE NON-EXECUTABLE FUNCTION (NEF) ERROR BIT SET.

6.2.4 TEST 2, SUBTEST 4: -

VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND ISSUED WHILE THE TAPE IS POSITIONED JUST BEFORE THE FIRST RECORD ON TAPE (BUT NOT AT BOT) CAUSES TAPE STATUS ALERT TERMINATION WITH THE REVERSE INTO BOT (RIB) STATUS BIT SET.

6.3 TEST 3 - NO-OP ("CLEAN TAPE") AND INITIALIZE

THIS TEST VERIFIES PROPER OPERATION OF THE NO-OP ("CLEAN TAPE") AND INITIALIZE COMMAND. SUBTESTS ARE:

6.3.1 TEST 3, SUBTEST 1: -

VERIFIES THAT THE NO-OP COMMAND (CORRESPONDS TO THE CLEAN TAPE COMMAND) TERMINATES PROPERLY (NORMAL TERMINATION), STORES PROPER STATUS IN THE MESSAGE BUFFER (LIKE THE GET STATUS COMMAND), AND INDEED DOES NOT MOVE TAPE. THE TAPE IS FIRST REWOUND AND WRITTEN WITH THE SEQUENCED TEST RECORDS. IT IS THEN REWOUND AGAIN AND THE NO-OP COMMAND IS ISSUED. IT IS VERIFIED THAT THE TAPE IS STILL AT BOT AND THAT PROPER STATUS IS STORED. THE FIRST RECORD ON TAPE IS READ AND VERIFIED (TO CHECK THAT TAPE POSITION AND VERIFYING DATA WERE NOT CHANGED), THEN THE NO-OP COMMAND IS ISSUED AGAIN AND STATUS AND POSITION ARE VERIFIED.

6.3.2 TEST 3, SUBTEST 2: -

VERIFIES THAT THE INITIALIZE COMMAND OPERATES AS A NO-OP, ASSUMING NO MICRODIAGNOSTIC ERRORS ARE PRESENT (THEY WOULD HAVE ALREADY BEEN DETECTED IN OTHER TESTS). THE TEST SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.

6.4 TEST 4 - ERASE AND OPERATION INCOMPLETE

```
*************************************************************
* NOTE: THIS TEST MUST HAVE A GOOD MAGTAPE IN THE DRIVE     *
* ANY TAPE ERRORS WILL BE DISPLAYED AS TAPE STATUS ALERT    *
*************************************************************
```

THIS TEST VERIFIES THAT THE ERASE COMMAND OPERATES PROPERLY AND THAT THE VARIOUS OTHER TAPE MOTION COMMANDS TERMINATE WITH UNRECOVERABLE ERROR (TAPE POSITION LOST) AND OPERATION INCOMPLETE (OPI) STATUS WHEN THEY DO NOT ENCOUNTER ANY DATA ON THE TAPE. THE TEST CONSISTS OF THE FOLLOWING SUBTESTS:

6.4.1 TEST 4, SUBTEST 1: -

VERIFIES THAT AN ERASE COMMAND ISSUED WHEN THE TAPE IS POSITIONED AT BOT OPERATES PROPERLY AND ACTUALLY ERASES THE TAPE. THE FOLLOWING TEST SEQUENCE IS PERFORMED:

1. THE TAPE IS FIRST REWOUND, THEN SEVERAL TEST RECORDS ARE WRITTEN AND THE TAPE IS REWOUND AGAIN.

2. AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER OF TEST RECORDS.

3. NORMAL TERMINATION IS VERIFIED AND POSITION IS CHECKED (BOT SHOULD BE 0).

4. A READ REVERSE COMMAND IS ISSUED. IT IS VERIFIED THAT THE COMMAND TERMINATES WITH TAPE STATUS ALERT, THAT THE REVERSE INTO BOT (RIB) STATUS BIT IS SET, AND THAT NO DATA IS TRANSFERRED. THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED IN THE AREA ERASED BY THE ERASE COMMAND.

6.4.2 TEST 4, SUBTEST 2: -

VERIFIES THAT AN ERASE COMMAND, EXECUTED WHEN THE TAPE IS NOT POSITIONED AT BOT OPERATES PROPERLY AND DOES NOT CORRUPT PREVIOUS TAPE RECORDS. THE TEST SEQUENCE IS:

1. THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE WRITTEN, AND THE TAPE IS REWOUND AGAIN.

2. A SPACE RECORDS FORWARD COMMAND IS ISSUED TO MOVE THE TAPE OFF OF BOT AND SKIP OVER THE FIRST SEVERAL RECORDS.

3. AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER OF TEST RECORDS.

4. NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED.

5. A READ REVERSE COMMAND IS ISSUED. IT IS VERIFIED THAT NORMAL TERMINATION IS ACCOMPLISHED AND THAT THE DATA TRANSFERRED CORRESPONDS TO THAT FOR THE EXPECTED RECORD. THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED IN THE AREA ERASED BY THE ERASE COMMAND, AND THAT THE PREVIOUS RECORD WAS NOT CORRUPTED.

6.4.3 TEST 4, SUBTEST 3: -

VERIFIES THAT THE TAPE MOTION COMMANDS, EXECUTED WHEN THE TAPE IS BLANK, RESULT IN UNRECOVERABLE ERROR TERMINATION AND OPERATION INCOMPLETE STATUS. THE FOLLOWING TEST SEQUENCE IS EXECUTED:

1. THE TAPE IS REWOUND.

2. 300 ERASE COMMANDS ARE ISSUED (ABOUT HALF-WAY DOWN FIRST TRACK).

3. IT IS VERIFIED THAT EACH OF THE FOLLOWING COMMANDS (ISSUED IN THE ORDER GIVEN) RESULTS IN UNRECOVERABLE ERROR TERMINATION WITH OPI=1; SPACE RECORDS REVERSE, SKIP TAPE MARKS REVERSE, READ REVERSE, REREAD PREVIOUS (OPP=0), REREAD PREVIOUS (OPP=1), REREAD NEXT (OPP=1), REREAD NEXT (OPP=0), READ NEXT, SKIP TAPE MARKS REVERSE, SKIP TAPE MARKS FORWARD, REVERSE SKIP TAPE MARKS FORWARD, SPACE RECORDS FORWARD, WRITE DATA RETRY.

6.5 TEST 5 - OPERATIONS AT EOT

```
*************************************************************
* NOTE: THIS TAPE MUST HAVE A GOOD MAGTAPE IN THE DRIVE     *
* ANY TAPE ERRORS WILL BE DISPLAYED AS TAPE STATUS ALERT    *
*************************************************************
```

THIS TEST VERIFIES THAT THE EOT STATUS IS HANDLED PROPERLY BY THE VARIOUS TAPE MOTION COMMANDS THE FOLLOWING TEST SEQUENCE IS PERFORMED:

1. THE TAPE IS REWOUND.

2. WRITE DATA COMMANDS ARE REPEATEDLY ISSUED UNTIL TAPE STATUS ALERT TERMINATION IS SEEN WITH EOT=1. ERRORS OTHER THAN OCCASIONAL CORRECTABLE, OR UNCORRECTABLE DATA ERRORS CAUSE A FATAL ERROR REPORT. RECORDS WITH DATA ERRORS ARE RETRIED, SO THE TAPE ENDS UP WITH GOOD DATA.

3. ANOTHER WRITE DATA COMMAND IS ISSUED AND IT IS CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.

4. A WRITE TAPE MARK COMMAND IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.

5. A SKIP TAPE MARKS REVERSE COMMAND IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS WITH EOT=1, AND TMK=1.

6. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF 1, IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1, AND TMK=1.

7. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF 1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION OCCURS WITH EOT=1.

8. A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF 1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION OCCURS, WITH EOT=1.

9. A READ REVERSE COMMAND IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION OCCURS WITH EOT=1.

10. A READ FORWARD COMMAND IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMIANTION OCCURS, WITH EOT=1.

11. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF 3, IS ISSUED, AND IT CHECKS THAT NORMAL TERMINATION OCCURS WITH EOT=0.

12. A SPACE RECORDS FORWARD COMMAND WITH A RECORD COUNT OF 3 IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION OCCURS WITH EOT=1.

13. A REWIND COMMAND IS ISSUED TO RETURN TO BOT.

```
                                        .SBTTL  PROGRAM HEADER
                                        .MCALL  SVC
000000                                  SVC                     ; INITIALIZE SUPERVISOR MACROS
                                        .ENABLE LC
                                        .NLIST  BEX,CND
000000                                  .ENABL  AMA,ABS
        002000                          . = 2000
002000                                          BGNMOD  TUV2A
002000                                  TUV2A::

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


002000                                          POINTER BGNSW,BGNSFT,BGNAU,BGNDU,BGNRPT,BGNSETUP
002000                                          HEADER  CZTKH,A,0,655.,0
002000                                  L$NAME::                ;DIAGNOSTIC NAME
002000          103                             .ASCII /C/
002001          132                             .ASCII /Z/
002002          124                             .ASCII /T/
002003          113                             .ASCII /K/
002004          110                             .ASCII /H/
002005          000                             .BYTE   0
002006          000                             .BYTE   0
002007          000                             .BYTE   0
002010                                  L$REV::                 ;REVISION LEVEL
002010          101                             .ASCII  /A/
002011                                  L$DEPO::                ;0
002011          060                             .ASCII  /0/
002012                                  L$UNIT::                ;NUMBER OF UNITS
002012  000001                                  .WORD   T$PTHV
002014                                  L$TIML::                ;LONGEST TEST TIME
002014  001217                                  .WORD   655.
002016                                  L$HPCP::                ;POINTER TO H.W. QUES.
002016  065012                                  .WORD   L$HARD
002020                                  L$SPCP::                ;POINTER TO S.W. QUES.
002020  065152                                  .WORD   L$SOFT
002022                                  L$HPTP::                ;PTR. TO DEF. H.W. PTABLE
002022  002124                                  .WORD   L$HW
002024                                  L$SPTP::                ;PTR. TO S.W. PTABLE
002024  002134                                  .WORD   L$SW
002026                                  L$LADP::                ;DIAG. END ADDRESS
002026  065376                                  .WORD   L$LAST
002030                                  L$STA::                 ;RESERVED FOR APT STATS
002030  000000                                  .WORD   0
002032                                  L$CO::
002032  000000                                  .WORD   0
002034                                  L$DTYP::                ;DIAGNOSTIC TYPE
002034  000000                                  .WORD   0
002036                                  L$APT::                 ;APT EXPANSION
002036  000000                                  .WORD   0
002040                                  L$DTP::                 ;PTR. TO DISPATCH TABLE
002040  065360                                  .WORD   L$DISPATCH
```

```
002042                          L$PRIO::                ;DIAGNOSTIC RUN PRIORITY
002042  000000                          .WORD   0
002044                          L$ENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
002044  000000                          .WORD   0
002046                          L$EXP1::                ;EXPANSION WORD
002046  000000                          .WORD   0
002050                          L$MREV::                ;SVC REV AND EDIT #
002050     003                          .BYTE   C$REVISION
002051     003                          .BYTE   C$EDIT
002052                          L$EF::                  ;DIAG. EVENT FLAGS
002052  000000                          .WORD   0
002054  000000                          .WORD   0
002056                          L$SPC::
002056  000000                          .WORD   0
002060                          L$DEVP::                ; POINTER TO DEVICE TYPE LIST
002060  003340                          .WORD   L$DVTYP
002062                          L$REPP::                ;PTR. TO REPORT CODE
002062  023062                          .WORD   L$RPT
002064                          L$EXP4::
002064  000000                          .WORD   0
002066                          L$EXP5::
002066  000000                          .WORD   0
002070                          L$AUT::                 ;PTR. TO ADD UNIT CODE
002070  022554                          .WORD   L$AU
002072                          L$DUT::                 ;PTR. TO DROP UNIT CODE
002072  022652                          .WORD   L$DU
002074                          L$LUN::                 ;LUN FOR EXERCISERS TO FILL
002074  000000                          .WORD   0
002076                          L$DESP::                ;POINTER TO DIAG. DESCRIPTION
002076  003346                          .WORD   L$DESC
002100                          L$LOAD::                ;GENERATE SPECIAL AUTOLOAD EMT
002100  104035                          EMT     E$LOAD
002102                          L$ETP::                 ;POINTER TO ERRTBL
002102  000000                          .WORD   0
002104                          L$ICP::                 ;PTR. TO INIT CODE
002104  021770                          .WORD   L$INIT
002106                          L$CCP::                 ;PTR. TO CLEAN-UP CODE
002106  023034                          .WORD   L$CLEAN
002110                          L$ACP::                 ;PTR. TO AUTO CODE
002110  022760                          .WORD   L$AUTO
002112                          L$PRT::                 ;PTR. TO PROTECT TABLE
002112  021760                          .WORD   L$PROT
002114                          L$TEST::                ;TEST NUMBER
002114  000000                          .WORD   0
002116                          L$DLY::                 ;DELAY COUNT
002116  000000                          .WORD   0
002120                          L$HIME::                ;PTR. TO HIGH MEM
002120  000000                          .WORD   0
```

```
                                        .SBTTL  DEFAULT HARDWARE P-TABLE

                                ;++
                                ; THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
                                ; THE TEST-DEVICE PARAMETERS.  THE STRUCTURE OF THIS TABLE
                                ; IS IDENTICAL TO THE STRUCTURE OF THE RUN-TIME P-TABLE.
                                ;--
 002122                                 BGNHW   DFPTBL          ;DEFAULT HARD-P-TABLE
 002122  000003                         .WORD   L10000-L$HW/2
 002124                         L$HW::
 002124                         DFPTBL::

 002124  172522                         .WORD   172522          ; 2ND (OF 2) REGISTERS.
 002126  000224                         .WORD   224             ; INTERRUPT VECTOR
 002130  000240                         .WORD   PRI05           ; INTERRUPT PRIORITY.
 002132                                 ENDHW
 002132                         L10000:
```

```
                                        .SBTTL  SOFTWARE P-TABLE

                                ;++
                                ; THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
                                ; PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
                                ;--
 002132                                 BGNSW   SFPTBL
 002132  000005                         .WORD   L10001-L$SW/2
 002134                         L$SW::
 002134                         SFPTBL::

 002134  000000                 TRANSTST::      .WORD   0       ;ENABLE RAM DUMP IF =1
 002136  000000                 NOITS::         .WORD   0       ; INHIBIT ITERATION OPTION.
                                                                ; ... 0 = ITERATE.
                                                                ; ...NZ = INHIBIT ITERATE.

 002140  000000                 EOTSEL::        .WORD   0       ;"INHIBIT EOT CHECKING (REDUCES TEST TIME
                                                                ;BY ABOUT 22 MINUTES"
 002142  000031                 LERRMAX::       .WORD   25.     ; LOCAL (PER TEST) ERROR LIMIT
 002144  000310                 GERRMAX::       .WORD   200.    ; GLOBAL (PER UNIT) ERROR LIMIT
 002146                                 ENDSW
 002146                         L10001:

```

```
                                        .SBTTL  GLOBAL EQUATES SECTION


                                        .SBTTL  GLOBAL EQUATES SECTION

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

 002146                                 EQUALS          ; GET STANDARD EQUATES.
                                ;
                                ; BIT DIFINITIONS
                                ;
            100000              BIT15== 100000
            040000              BIT14== 40000
            020000              BIT13== 20000
            010000              BIT12== 10000
            004000              BIT11== 4000
            002000              BIT10== 2000
            001000              BIT09== 1000
            000400              BIT08== 400
            000200              BIT07== 200
            000100              BIT06== 100
            000040              BIT05== 40
            000020              BIT04== 20
            000010              BIT03== 10
            000004              BIT02== 4
            000002              BIT01== 2
            000001              BIT00== 1
                                ;
            001000              BIT9==  BIT09
            000400              BIT8==  BIT08
            000200              BIT7==  BIT07
            000100              BIT6==  BIT06
            000040              BIT5==  BIT05
            000020              BIT4==  BIT04
            000010              BIT3==  BIT03
            000004              BIT2==  BIT02
            000002              BIT1==  BIT01
            000001              BIT0==  BIT00
                                ;
                                ; EVENT FLAG DEFINITIONS
                                ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
                                ;
            000040              EF.START==      32.                             ; START COMMAND WAS ISSUED
            000037              EF.RESTART==    31.                             ; RESTART COMMAND WAS ISSUED
            000036              EF.CONTINUE==   30.                             ; CONTINUE COMMAND WAS ISSUED
            000035              EF.NEW==        29.                             ; A NEW PASS HAS BEEN STARTED
            000034              EF.PWR==        28.                             ; A POWER-FAIL/POWER-UP OCCURRED
                                ;
                                ;
                                ; PRIORITY LEVEL DEFINITIONS
                                ;
```

```
000340                  PRI07=: 340
000300                  PRI06=: 300
000240                  PRI05=: 240
000200                  PRI04=: 200
000140                  PRI03=: 140
000100                  PRI02=: 100
000040                  PRI01=: 40
000000                  PRI00=: 0
                        ;
                        ;OPERATOR FLAG BITS
                        ;
000004                  EVL=:        4
000010                  LOT=:       10
000020                  ADR=:       20
000040                  IDU=:       40
000100                  ISR=:      100
000200                  UAM=:      200
000400                  BOE=:      400
001000                  PNT=:     1000
002000                  PRI=:     2000
004000                  IXE=:     4000
010000                  IBE=:    10000
020000                  IER=:    20000
040000                  LOE=:    40000
100000                  HOE=:   100000
760
761 002146                      KT11    ,,      ;DEFINE MEMORY MANAGEMENT REGISTERS
                        .SBTTL  MEMORY MANAGEMENT DEFINITIONS
                        ;*KT11 VECTOR ADDRESS
000250                  MMVEC=  250
                        ;*KT11 STATUS REGISTER ADDRESSES
177572                  SR0=    177572
177574                  SR1=    177574
177576                  SR2=    177576
172516                  SR3=    172516
                        .IF NB
                        ;*USER "I" PAGE DESCRIPTOR REGISTERS
                        UIPDR0= 177600
                        UIPDR1= 177602
                        UIPDR2= 177604
                        UIPDR3= 177606
                        UIPDR4= 177610
                        UIPDR5= 177612
                        UIPDR6= 177614
                        UIPDR7= 177616
                        .IF NB
                        ;*USER "D" PAGE DESCRIPTOR REGISTORS
                        UDPDR0= 177620
                        UDPDR1= 177622
                        UDPDR2= 177624
                        UDPDR3= 177626
                        UDPDR4= 177630
                        UDPDR5= 177632
                        UDPDR6= 177634
                        UDPDR7= 177636
                        .ENDC
                        ;*USER "I" PAGE ADDRESS REGISTERS
```

```
UIPAR0= 177640
UIPAR1= 177642
UIPAR2= 177644
UIPAR3= 177646
UIPAR4= 177650
UIPAR5= 177652
UIPAR6= 177654
UIPAR7= 177656
.IF NB
;*USER "D" PAGE ADDRESS REGISTERS
UDPAR0= 177660
UDPAR1= 177662
UDPAR2= 177664
UDPAR3= 177666
UDPAR4= 177670
UDPAR5= 177672
UDPAR6= 177674
UDPAR7= 177676
.ENDC
.ENDC
.IF NB
;*SUPERVISOR "I" PAGE DESCRIPTOR REGISTERS
SIPDR0= 172200
SIPDR1= 172202
SIPDR2= 172204
SIPDR3= 172206
SIPDR4= 172210
SIPDR5= 172212
SIPDR6= 172214
SIPDR7= 172216
.IF NB
;*SUPERVISOR "D" PAGE DESCRIPTOR REGISTERS
SDPDR0= 172220
SDPDR1= 172222
SDPDR2= 172224
SDPDR3= 172226
SDPDR4= 172230
SDPDR5= 172232
SDPDR6= 172234
SDPDR7= 172236
.ENDC
;*SUPERVISOR "I" PAGE ADDRESS REGISTERS
SIPAR0= 172240
SIPAR1= 172242
SIPAR2= 172244
SIPAR3= 172246
SIPAR4= 172250
SIPAR5= 172252
SIPAR6= 172254
SIPAR7= 172256
.IF NB
;*SUPERVISOR "D" PAGE ADDRESS REGISTERS
SDPAR0= 172260
SDPAR1= 172262
SDPAR2= 172264
SDPAR3= 172266
SDPAR4= 172270
```

```
                        SDPAR5= 172272
                        SDPAR6= 172274
                        SDPAR7= 172276
                        .ENDC
                        .ENDC
                        ;*KERNEL "I" PAGE DESCRIPTOR REGISTERS
172300                  KIPDR0= 172300
172302                  KIPDR1= 172302
172304                  KIPDR2= 172304
172306                  KIPDR3= 172306
172310                  KIPDR4= 172310
172312                  KIPDR5= 172312
172314                  KIPDR6= 172314
172316                  KIPDR7= 172316
                        .IF NB
                        ;*KERNEL "D" PAGE
                         DESCRIPTOR REGISTERS
                        KDPDR0= 172320
                        KDPDR1= 172322
                        KDPDR2= 172324
                        KDPDR3= 172326
                        KDPDR4= 172330
                        KDPDR5= 172332
                        KDPDR6= 172334
                        KDPDR7= 172336
                        .ENDC
                        ;*KERNEL "I" PAGE ADDRESS REGISTERS
172340                  KIPAR0= 172340
172342                  KIPAR1= 172342
172344                  KIPAR2= 172344
172346                  KIPAR3= 172346
172350                  KIPAR4= 172350
172352                  KIPAR5= 172352
172354                  KIPAR6= 172354
172356                  KIPAR7= 172356
                        .IF NB
                        ;*KERNEL "D" PAGE ADDRESS REGISTERS
                        KDPAR0= 172360
                        KDPAR1= 172362
                        KDPAR2= 172364
                        KDPAR3= 172366
                        KDPAR4= 172370
                        KDPAR5= 172372
                        KDPAR6= 172374
                        KDPAR7= 172376
                        .ENDC
```

```
                                .SBTTL  TK-25 REGISTER AND PACKET DEFINITIONS

                        ;
                        ; SOME GENERAL EQUATES.
                        ;

000004                  ERRVEC==        4               ; POINTER TO ERROR VECTOR FOR BUS TIME OUT.
000060                  TTIVEC==        60              ; INTERRUPT VECTOR FOR CONSOLE INPUT
177560                  TTICSR==        177560          ; BUS ADDRESS OF CONSOLE INPUT
177562                  TTIBFR==        177562          ; CONSOLE INPUT DATA BUFFER

                        ;+
                        ;BIT DEFINITIONS FOR TSSR REGISTER
                        ;-

100000                  SC=     BIT15                   ;SPECIAL CONDITION
040000                  BIE=    BIT14                   ;BUS INTERFACE ERROR
020000                  SCE=    BIT13                   ;SANITY CHECK ERROR
010000                  RMR=    BIT12                   ;MODIFICATION REFUSED
004000                  NXM=    BIT11                   ;NONEXISTANT MEMORY ERROR
002000                  NBA=    BIT10                   ;NEED BUFFER ADDRESS
001400                  HIADDR= BIT9!BIT8               ;EXTENDED ADDRESS BITS
000200                  SSR=    BIT7                    ;SUB SYSTEM READY
000100                  OFL=    BIT6                    ;OFF LINE BIT
000060                  FATERR= BIT4!BIT5               ;FATAL TERMINATION ERROR CODES
000016                  TERCLS= BIT3!BIT2!BIT1          ;TERMINATION CODES


                        ;+
                        ;
                        ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 0
                        ;(XST0)
                        ;
                        ;-

100000                  XS0TMK= BIT15                   ;TAPE MARK DETECTED
040000                  XS0RLS= BIT14                   ;RECORD LENGTH SHORT
020000                  XS0LET= BIT13                   ;LOGICAL END OF TAPE
010000                  XS0RLL= BIT12                   ;RECORD LENGTH LONG
004000                  XS0WLE= BIT11                   ;WRITE LOCK ERROR
002000                  XS0NEF= BIT10                   ;NON EXECUTABLE FUNCTION
001000                  XS0ILC= BIT9                    ;ILLEGAL COMMAND
000400                  XS0ILA= BIT8                    ;ILLEGAL ADDRESS
000200                  XS0MOT= BIT7                    ;TAPE IN MOTION
000100                  XS0ONL= BIT6                    ;TRANSPORT ON LINE
000040                  XS0IE=  BIT5                    ;INTERRUPT ENABLE
000020                  XS0VCK= BIT4                    ;VOLUME CHECK BIT
000010                  XS0PED= BIT3                    ;PHASE ENCODED DRIVE
000004                  XS0WLK= BIT2                    ;WRITE LOCKED
000002                  XS0BOT= BIT1                    ;BEGINNING OF TAPE
000001                  XS0EOT= BIT0                    ;END OF TAPE


                        ;+
                        ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 1
                        ;(XST1)
                        ;-
```

```
100000                  X1.DLT   = BIT15                    ;DATA LATE
040000                  X1.SPARE= BIT14                    ;NOT USED
020000                  X1.COR   = BIT13                    ;CORRECTABLE DATA ERROR
017375                  X1.MBZ   = BIT12+BIT11+BIT10+BIT9+BIT7+BIT6+BIT5+BIT4+BIT3+BIT2+BIT0 ;ALWAYS 0
000400                  X1.RBP   = BIT8                     ;READ BUS PARITY ERROR
000002                  X1.UNC   = BIT1                     ;UNCORRECTABLE DATA OR HARD ERROR

                        ;+
                        ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 2
                        ;(XST2)
                        ;-
100000                  X2.OPM   = BIT15                    ;OPERATION IN PROGRESS (TAPE MOVING)
040000                  X2.RCE   = BIT14                    ;RAM CHECKSUM ERROR
035400                  X2.SPARE= BIT13+BIT12+BIT11+BIT9+BIT8   ;NOT USED BY TK-25 (ALWAYS=0)
002000                  X2.WCF   = BIT10                    ;WRITE CLOCK FAILURE (FIFO NOT EMPTIED BY TRANSPORT)
000200                  X2.EXTF  = BIT7                     ;IF WRITE CHAR CMD THEN = EXTENDED FEATURES ENABLED
000100                  X2.BUFE  = BIT6                     ;IF WRITE CHAR CMD THEN = BUFFERING ENABLED
000077                  X2.REV   = 000077                   ;IF WRITE CHAR CMD THEN = MICROCODE REVISION LEVEL
000007                  X2.UNIT  = BIT2+BIT1+BIT0           ;IF GET STATUS THEN = CURRENTLY SELECTED UNIT NO.

                        ;+
                        ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 3
                        ;(XST3)
                        ;-
177400                  X3.MDE   = 177400                   ;MICRO-DIAGNOSTIC ERROR CODE
000200                  X3.SPARE= BIT7                     ;NOT USED BY TK-25
000100                  X3.OPI   = BIT6                     ;OPERATION INCOMPLETE
000040                  X3.REV   = BIT5                     ;REVERSE
000020                  X3.TRF   = BIT4                     ;TRANSPORT RESPONSE FAILURE
000010                  X3.DCK   = BIT3                     ;DENSITY CHECK
000006                  X3.MBZ   =BIT2+BIT1                 ;NOT USED ALWAYS 0
000001                  X3.RIB   = BIT0                     ;REVERSE INTO BOT

                        ;+
                        ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 4
                        ;(XST4)
                        ;-
100000                  X4.HSP   = BIT15                    ;HIGH SPEED
040000                  X4.RCE   = BIT14                    ;RETRY COUNT EXCEEDED
020000                  X4.TSM   = BIT13                    ;TRANSPORT SPECIAL MODE
017400                  X4.MBZ   = BIT12+BIT11+BIT10+BIT9+BIT8   ;NOT USED ALWAYS 0
000377                  X4.WRC   = 000377                   ;WRITE RETRY COUNT FIELD


                        ;+
                        ;
                        ;TSSR TERMINATION CODES (BIT 0-2)
                        ;
                        ;-

000006                          TSREJ=  3+2                     ;COMMAND REJECTED
000006                          UNREC=  6                       ;UNRECOVERABLE ERROR

                        ;+
                        ;
                        ;DEVICE REGISTER OFFSETS
                        ;
```

```
                                ;-
                                ;
177776                          TSBA**   -2
177776                          TSBAL**  -2
177776                          TSDB**   -2                          ;TSDB/TSBA REGISTER
177776                          TSDBL**  -2                          ;TSDB/TSBA REGISTER
177777                          TSBAH**  -1
177777                          TSDBH**  -1                          ;TSDB/TSBA REGISTER HIGH BYTE
000000                          TSSR**   0                           ;TSSR REGISTER
000001                          TSSRH**  1                           ;TSSR REGISTER HIGH BYTE
                                ;
                                ;+
                                ; TSDB ADDRESS BIT DEFINITIONS
                                ;-
000003                          A1716    = BIT1+BIT0                 ;ADDRESS BITS 17;16 ARE IN 1;0
                                ;
                                ;+
                                ; COMMAND DEFINITIONS
                                ;-
000017                          P.GETSTAT        = 17                ;GET STATUS
000013                          P.INIT           = 13                ;INITIALIZE
000012                          P.CONTROL        = 12                ;CONTROL COMMANDS
000011                          P.FORMAT         = 11                ;FORMAT
000010                          P.POSITION       = 10                ;POSITION
000006                          P.WRTSUB         = 6                 ;SUBSYSTEM WRITE
000005                          P.WRITE          = 5                 ;WRITE
000004                          P.WRTCHAR        = 4                 ;WRITE CHARACTERISTICS
000001                          P.READ           = 1                 ;READ
                                ;
                                ;+
                                ; COMMAND PACKET HEADER WORD BIT DEFINITIONS
                                ;-
100000                                  P.ACK    = BIT15             ;BUFFER AVAIL FOR CONTROLLER
040000                                  P.CVC    = BIT14             ;CLEAR VOLUME CHECK
020000                                  P.OPP    = BIT13             ;REVERSE SEQUENCE OF DATA BITS
010000                                  P.SWB    = BIT12             ;SWAP BYTES IN MEMORY
007400                                  P.MODE   = BIT11!BIT10!BIT9!BIT8 ;EXTENDED COMMAND MODE FIELD
000200                                  P.IE     = BIT7              ;INTERRUPT ENABLE
000140                                  P.FMT= BIT6!BIT5             ;PACKET HEADER TYPE (ALWAYS=0)
000037                                  P.CMD    = 37                ;MAJOR COMMAND FIELD
                                ;+
                                ; CONTROL COMMAND MODE CODES
                                ;-
000000                                  PC.RELEASE       = 0*256.    ;RELEASE BUFFER
000400                                  PC.REWIND        = 1*256.    ;REWIND
001000                                  PC.NOOP          = 2*256.    ;NO-OP
002000                                  PC.IEREW         = 4*256.    ;REWIND IMMEDIATE INTERRUPT
002400                                  PC.ERASE         = 5*256.    ;SECURITY ERASE
                                ;+
                                ; CONTROLLER RAM DEFINITIONS
                                ;-
000167                          RMCHBEG = 167                        ;CHARACTERISTICS IO DATA BEGIN RAM ADDRESS
000200                          RMCHEND = 200                        ;CHARACTERISTICS IO DATA END RAM ADDRESS
000020                          RMPKTBEG= 20                         ;COMMAND PACKET BEGIN RAM ADDRESS
000027                          RMPKTEND= 27                         ;COMMAND PACKET END RAM ADDRESS
000104                          RMMSGBEG= 104                        ;MESSAGE BUFFER BEGIN RAM ADDRESS
```

```
000117                  RMMSGEND= 117                           ;MESSAGE BUFFER END RAM ADDRESS
                        ;+
                        ;
                        ;REGISTER DEFINITIONS IN THE MESSAGE BUFFER
                        ;
                        ;-

000006                  XST0=:  6                               ;EXTENDED STATUS REGISTER 0 (WORD 4)
000010                  XST1=:  8.                              ;EXTENDED STATUS REGISTER 1 (WORD 5)
000012                  XST2=:  10.                             ;EXTENDED STATUS REGISTER 2 (WORD 6)
000014                  XST3=:  12.                             ;EXTENDED STATUS REGISTER 3 (WORD 7)
000016                  XST4=:  14.                             ;EXTENDED STATUS REGISTER 4 (WORD 8)


                        ;+
                        ;
                        ;OFFSETS TO WORD LOCATIONS IN PACKET DEFINITIONS
                        ;
                        ;-

000002                          PKLOW   = 2                     ;LOW ORDER CHARACTERISTIC DATA POINTER
000004                          PKHI    = 4                     ;HIGH ORDER CHARACTERISTIC DATA POINTER
000006                          PKBCNT  = 6                     ;NUMBER OF BYTES IN DATA PACKET

000010                          EXBCNT=10                       ;NUMBER OF BYTES IN EXTENDED DATA PACKET


                        ;+
                        ;DATA PACKET OFFSETS FOR WRITE SUBSYTEM COMMAND
                        ;-
000000                          BSEL0   = 0                     ;BYTE 0
000001                          BSEL1   = 1                     ;BYTE 1
000002                          SEL2    = 2                     ;WORD 2
000004                          SELDATA = 4                     ;WORD 3

                        ;+
                        ;BSEL0 SELECT CODES FOR WRITE SUBSYSTEM COMMAND
                        ;-
000000                  PW.NOP          = 0                     ;NO-OP
000001                  PW.RDRAM        = 1                     ;READ RAM
000002                  PW.WTRAM        = 2                     ;WRITE RAM
000003                  PW.RFIFO        = 3                     ;READ FIFO
000004                  PW.WFIFO        = 4                     ;WRITE FIFO
000005                  PW.RDSTAT       = 5                     ;READ STATUS
000006                  PW.WCTL         = 6                     ;WRITE TAPE CONTROL
000007                  PW.WFMT         = 7                     ;WRITE TAPE FORMAT
000010                  PW.WMISC        = 10                    ;WRITE MISCELLANEOUS
000011                  PW.WNPR         = 11                    ;WRITE NPR CONTROL
000020                  PW.D22          = 20                    ;DO MICROTEST 22
000021                  PW.D11          = 21                    ;DO MICROTEST 11
000022                  PW.D13          = 22                    ;DO MICROTEST 13
000023                  PW.NO1311       = 23                    ;DISABLE MICROTEST 11 AND 13
000024                  PW.RDEXT        = 24                    ;READ EXT. TAPE STATUS (NOT SUPPORTED BY ALL TRANSPO
RTS

                        ;+
                        ;BSEL1 CODES FOR WRITE TAPE CONTROL
                        ;-
000200                  WC.IFAD         = BIT7                  ;IFAD - FORMATTER ADDRESS
```

```
000100          WC.IOTAD        = BIT6          ;ITAD0  - TRANSPORT ADDRESS BIT 0
000040          WC.I1TAD        = BIT5          ;ITAD1  - TRANSPORT ADDRESS BIT 1
000020          WC.I5RESV       = BIT4          ;IRESV5 - RESERVED Ø5
000010          WC.IREW         = BIT3          ;IREW   - REWIND
000004          WC.IRWU         = BIT2          ;IRWU   - REWIND AND UNLOAD
000002          WC.IFEN         = BIT1          ;IFEN   - FORMATTER ENABLE
000001          WC.IGO          = BIT0          ;GO

                ;+
                ;BSEL1 CODES FOR WRITE FORMAT
                ;-
000200          WF.IHISP        = BIT7          ;IHISP  - HIGH SPEED
000100          WF.IWRT         = BIT6          ;IWRT   - WRITE
000040          WF.IREV         = BIT5          ;IREV   - REVERSE
000020          WF.IWFM         = BIT4          ;IWFM   - WRITE FILE MARK
000010          WF.IEDIT        = BIT3          ;IEDIT  - EDIT
000004          WF.IERASE       = BIT2          ;IERASE - ERASE
000002          WF.I3RESV       = BIT1          ;IRESV3 - RESERVED Ø3
000001          WF.I4RESV       = BIT0          ;IRESV4 - RESERVED Ø4


                ;+
                ;BSEL1 CODES FOR WRITE MISCELLANEOUS SUBCOMMAND
                ;-
000200          MS.EXT          = BIT7          ;INVERT SENSE OF EXTENDED FEATURES SWITCH
000020          MS.RSFIFO       = BIT4          ;RESET FIFO AND INPUT PARITY ERRORR
000010          MS.RSTAPE       = BIT3          ;RESET TAPE STATUS IN 2 FLIP-FLOPS
000006          MS.ATTN         = BIT2!BIT1     ;ATTENTION TRIGGER FIELD
000001          MS.RSD          = BIT0          ;RESET TIMER A,B THEN DELAY TIMES IN SEL2
                ;+
                ; MS.ATTN SUBCODES
                ;-
000000                  MSA.NOP = 0*2           ;NO-OP (NOTHING TRIGGERED)
000002                  MSA.VOL = 1*2           ;SIMULATE ON-LINE/OFF-LINE TRANSISTION
000004                  MSA.NRAM= 2*2           ;FORCE NON-FATAL RAM ERROR (FORCES ERRCODE 54)
000006                  MSA.FRAM= 3*2           ;FORCE FATAL RAM ERROR (CAUSES SCE TO SET)
                ;+
                ; WRITE SUBSYSTEM WRITE NPR BSEL1 BIT DEFINITIONS
                ;-
000200          NP.IR           = BIT7          ;INTERRUPT REQUEST (0-1 TRANSITION)
000100          NP.OUT          = BIT6          ;TAPE DATA DIRECTION OUT (0= IN)
000040          NP.LOOP         = BIT5          ;ENABLE TRANSPORT LOOPBACK
000020          NP.WRP          = BIT4          ;WRITE CORRECT PARITY (SET=0 TO WRITE WRONG)
                ;+
                ; READ STATUS MESSAGE BUFFER BIT DEFINITIONS
                ;-

000200          S2.DIM          = BIT7          ;WORD Ø9 BYTE 2 DATA IN MISS
000100          S2.ILW          = BIT6          ;               ILW H
000040          S2.OUTRDY       = BIT5          ;               OUT RDY H
000020          S2.INRDY        = BIT4          ;               IN RDY H
000010          S2.ATIMR        = BIT3          ;               TIMER A FLAG H
000004          S2.BTIMR        = BIT2          ;               TIMER B FLAG H
000003          S2.UNDEF        = BIT1+BIT0     ;(UNDEFINED)
100000          S1.PARIN        = BIT15         ;WORD Ø8 BYTE 1 PARIN H
040000          S1.I2RESV       = BIT14         ;               IRESV2
020000          S1.I1RESV       = BIT13         ;               IRESV1
```

```
010000          S1.IEOT         = BIT12                 ;               IEOT L
004000          S1.IIDENT       = BIT11                 ;               IIDENT H
002000          S1.ICER         = BIT10                 ;               ICER H
001000          S1.IFMK         = BIT9                  ;               IFMK H
000400          S1.IHER         = BIT8                  ;               IHER H
000200          S0.ISPEED       = BIT7                  ;WORD 08 BYTE 0 ISPEED H
000100          S0.IRDY         = BIT6                  ;               IRDY L
000040          S0.IONL         = BIT5                  ;               IONL L
000020          S0.ILDP         = BIT4                  ;               ILDP L
000010          S0.IDBY         = BIT3                  ;               IDBY L
000004          S0.IRWD         = BIT2                  ;               IRWD L
000002          S0.IFBY         = BIT1                  ;               IFBY L
000001          S0.IFPT         = BIT0                  ;               IFPT L
                ;       SPECIAL KEYBORD STUFF FOR MOVER PROGRAM

177560                  TKS     =177560                 ;KEYBOARD STATUS REGISTER
177562                  TKB     =177562                 ;KEYBOARD DATA REGISTER
177564                  TPS     =177564                 ;CONSOLE PRINTER STATUS REGISTER
177566                  TPB     =177566                 ;CONSOLE PRINTER DATA REGISTER
007776                  HIMEM   =007776                 ;HIGH MEMORY MASK VALUE
                ;       CONTROLLER DEFINITIONS
                ;
                ;
174400                  CSR     =174400                 ;STATUS AND CONTROL REGISTER
174402                  BAR     =174402                 ;DL ADDRESS REGISTER
174404                  DAR     =174404                 ;PLATTER ADDRESS
174406                  MPR     =174406                 ;MULTIPURPOSE REGISTER
                ;
                ;
                ;
                ;
                ;
                ;       CONTROLLER COMMANDS
                ;
                ;
000004                  DLGETS  =4                      ;GET STATUS COMMAND
000006                  SEEK    =6                      ;SEEK TRACK AND HEAD SELECT
000010                  DLRDHD  =10                     ;READ SECTOR HEADER
000014                  READ    =14                     ;READ COMMAND
000016                  DLRDNH  =16                     ;READ SECTOR NO HEADER CHECK
                ;
                ;
                ;
                ;
                ;
                ;
000001                  READY   =1                      ;DRIVE READY BIT IN STATUS REG.
000013                  DLSR    =13                     ;STATUS AND RESET
177730                  DLERR   =177730                 ;MASK FOR COVER OPEN
000006                  DLUN    =6                      ;HEADS UNLOADED
000177                  DLCYL   =000177                 ;MASK FOR CYLINDER ADDRESS
100200                  DLDNER  =100200                 ;DONE SET OR ERROR SET BITS
                ;
                ;
                ;
                ;
                ;       ROMBASE =       MOVER           ;START OF THE BOOT ROM 00000
```

```
177560                          TTICSR  =       177560          ;KEYBOARD INPUT STATUS
177562                          TTIBFR  =       177562          ;KEYBOARD DATA REGISTER
177564                          TTOCSR  =       177564          ;CONSOLE PRINTER STATUS REGISTER
177566                          TTOBFR  =       177566          ;CONSOLE PRINTER DATA REGISTER
```

```
                        .SBTTL  SPECIAL MACROS AND OPDEFS.


                ;+
                ;SAVE GENERAL REGS 1 TO 5
                ;-

                        .MACRO  SAVREG
                        JSR     R5,REGSAV
                        .ENDM

                ;+
                ; MACRO TO FORCE AN ERROR
                ;-
                .MACRO  FORCERROR       TAG,NOTSSR
                .NLIST
                .IIF NDF LISTALL, .NLIST
                .LIST
                .IF B NOTSSR
                        MOV     TSSR(R5),R1             ;READ TSSR
                .ENDC
                        MOV     FORCER,FORCER           ;IS FORCER SET? (LEAVE C BIT ALONE)
                        BNE     TAG                     ;BR IF YES
                .NLIST
                .IIF NDF LISTALL, .LIST
                .LIST
                .ENDM

                ;+
                ; MACRO TO FORCE AN EXIT TO AVOID SECTION ITERATIONS
                ;       WILL EXIT TO A LABEL IF FORCER IS NEGATIVE
                ;       SO TO FORCE ERRORS AND EXIT ON 1 ERROR SET
                ;       FORCER TO 177777
                ;       TO FORCE ERRORS AND ITERATIONS SET FORCER TO 1.
                ;-
                .MACRO  FORCEXIT        TAG
                .NLIST
                .IIF NDF LISTALL, .NLIST
                .LIST
                        MOV     FORCER,FORCER           ;IS FORCER NEGATIVE?
                        BMI     TAG                     ;BR IF YES
                .NLIST
                .IIF NDF LISTALL, .LIST
                .LIST
                .ENDM
                ;+
                ; MACRO TO INCREMENT ERROR COUNTS
                ;-
                .MACRO  NEXT.ERRNO
                .NLIST
                ;;;.IIF NDF LISTALL, .NLIST
                        ERRNO=ERRNO+1
                ;;;.IIF NDF LISTALL, .LIST
                .LIST
                .ENDM

                ;+
```

```
                                ;MACRO TO PERFORM XOR
                                ;-

                                        .MACRO  XOR     A,B
                                        MOV     A,-(SP)
                                        BIC     B,(SP)
                                        BIC     A,B
                                        BIS     (SP)+,B
                                        .ENDM

        000000                          EN=0                            ; INITIALIZE ERROR NUMBER
                                        .SBTTL  FORCER  - FORCE ERROR FLAG

                                ;
                                ; THE FOLLOWING LOCATIONS MAY BE PATCHED BY THE USER
                                ; TO OBTAIN THE RESULTS DESCRIBED FOR EACH.
                                ;

002146  000000                  FORCER::        0       ; FORCE TYPE ALL HARD ERRORS (THE ONES CALLED -
                                                ; - BY THE MACRO "IFERROR").  AN ERROR NEED NOT -
                                                ; - EXIST, JUST ASSUME AND TYPE THE MESSAGE.
```

```
                                        .SBTTL  GLOBAL DATA SECTION

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

                                ;
                                ;THE FOLLOWING DATA ARE SET FOR EACH UNIT AT INIT TIME.
                                ;SINGLE UNIT DEFAULTS (LISTED) ARE IN THE DEFAULT P-TABLE.
                                ;
002150  000000                  EPRTSW::        .WORD   0               ;PRINT SWITCH
002152  000000                  UNITN::         .WORD   0               ;UNIT # UNDER TEST.
002154  000000                  QVP::           .WORD   0               ;QUICK VERIFY FLAG.
002156  000000                  CSRADDR::       .WORD   0               ;ADDRESS OF CSR FOR CURRENT DEVICE
002160  000224                  IVEC::          .WORD   224             ;INTERRUPT VECTOR
002162  000200                  IPRI::          .WORD   PRI04           ;INTERRUPT PRIORITY.
002164  000000                  TSTCNT::        .WORD   0               ;NUMBER OF TESTS RUN IN THIS PASS
002166  000000                  LOOPCNT::       .WORD   0               ;REMAINING ITERATION COUNT FOR TEST
002170  000000                  DEVCNT::        .WORD   0               ;NUMBER OF DEVICE UNDER TEST
002172  000000                  FATFLG::        .WORD   0               ;SET IF FATAL ERROR IS DETECTED IN TEST
002174  000000                  INTRECV::       .WORD   0               ;SET IF TAPE INTERRUPT WAS RECEIVED
002176  000000                  BENBSW::        .WORD   0               ;BUFFER ENABLE SWITCH SW 0=OFF;1=ON
002200  000000                  EXPD::          .WORD   0               ;EXPECTED RAM DATA FOR PRAMPKT ROUTINE
002202  000000                  RECV::          .WORD   0               ;RECEIVED RAM DATA FOR PRAMPKT ROUTINE
002204  000000                  ERRHI::         .WORD   0               ;HIGH ADDRESS MEMORY ERROR
002206  000000                  ERRLO::         .WORD   0               ;LOW ADDRESS MEMORY ERROR
002210                          RAMDATA::       .BLKW   16.             ;DATA READ FROM RAM PACKET OR MESSAGE BUF AREA
002250  000000                  RAMSIZ::        .WORD   0               ;RAM DATA SIZE FOR PRAMPKT ROUTINE
002252  000000                  RCVHIADD::      .WORD   0               ;RECEIVED BUFFER HIGH ADDRESS
002254  000000                  RCVLOADD::      .WORD   0               ;RECEIVED BUFFER LOW ADDRESS
002256  000000                  COUNT::         .WORD   0               ;TEST COUNT PATTERN
002260  000000                  DATA::          .WORD   0               ;TEST DATA
002262  000000                  TSTFLAG::       .WORD   0               ;TEST FLAG WORD
002264  000000                  TSTPTR::        .WORD   0               ;TSTBLK POINTER
002266  000000                  PRMNO::         .WORD   0               ;PRINT ROUTINE TEMP
002270                          EXPMSG::        .BLKB   100.            ;EXPECTED MESSAGE BUFFER DATA
002434                          RECMSG::        .BLKB   100.            ;RECEIVED MESSAGE BUFFER DATA
002600                          TMPBFR::        .BLKB   80.             ;TEMPORARY STORAGE FOR PRINT
002720  000000                  MESBFA::        .WORD   0               ;STORES ADDRESS OF MESSAGE BUFFER FOR ERR PRT

002722  000000                  FLLTSW::        .WORD   0               ;0=1ST PASS, NON-ZERO= OTHER (FAULT MES)
```

```
                                        .SBTTL  TSTBLK  - TEST DATA TABLE

                                ;+
                                ;
                                ;THIS TABLE CONTAINS TEST DATA USED IN SEVERAL TESTS
                                ;
                                ;IN SEQUENCE THE DATA IS:
                                ;
                                ;       ALL ZEROS
                                ;       ALL ONES
                                ;       WALKING ONES
                                ;       WALKING ZEROS
                                ;       ALTERNATING ONES AND ZEROS
                                ;
                                ;-

002724                          TSTBLK::
002724  000000                          .WORD   0                       ;ALL ZEROS
002726  177777                          .WORD   177777                  ;ALL ONES
002730  000001                          .WORD   BIT0                    ;DATA FOR WALKING ONES
002732  000002                          .WORD   BIT1
002734  000004                          .WORD   BIT2
002736  000010                          .WORD   BIT3
002740  000020                          .WORD   BIT4
002742  000040                          .WORD   BIT5
002744  000100                          .WORD   BIT6
002746  000200                          .WORD   BIT7
002750  000400                          .WORD   BIT8
002752  001000                          .WORD   BIT9
002754  002000                          .WORD   BIT10
002756  004000                          .WORD   BIT11
002760  010000                          .WORD   BIT12
002762  020000                          .WORD   BIT13
002764  040000                          .WORD   BIT14
002766  100000                          .WORD   BIT15
002770  177776                          .WORD   ↑CBIT0                  ;DATA FOR WALKING ZEROS
002772  177775                          .WORD   ↑CBIT1
002774  177773                          .WORD   ↑CBIT2
002776  177767                          .WORD   ↑CBIT3
003000  177757                          .WORD   ↑CBIT4
003002  177737                          .WORD   ↑CBIT5
003004  177677                          .WORD   ↑CBIT6
003006  177577                          .WORD   ↑CBIT7
003010  177377                          .WORD   ↑CBIT8
003012  176777                          .WORD   ↑CBIT9
003014  175777                          .WORD   ↑CBIT10
003016  173777                          .WORD   ↑CBIT11
003020  167777                          .WORD   ↑CBIT12
003022  157777                          .WORD   ↑CBIT13
003024  137777                          .WORD   ↑CBIT14
003026  077777                          .WORD   ↑CBIT15
003030  125252                          .WORD   125252                  ;ALTERNATING ONES, ZEROS
003032  052525                          .WORD   052525                  ;ALTERNATING ONES, ZERO OPPOSITE FROM ABOVE
        003034                  TBLEND**.
```

```
                                        .SBTTL  GLOBAL ENVIRONMENT STORAGE
                                ;
                                ;STORAGE FOR DEVICE REGISTERS
                                ;
003034  000000  100000  000000  DUMMY:  0,100000,0,0                    ;DUMMY DEVICE REGISTERS...
003044  000000  000000  000000          0,0,0,0,0,0,0,0
                                                                        ;...FOR MULTI-UNIT CHECKOUT.


003064  000000                  DUFLG::         .WORD   0               ;"DROPPED UNIT" FLAG.
                                                                        ;INHIBITS CODE IN "CLEAN-UP".
003066  000000                  NODEV::         .WORD   0               ;FLAG TO SAY NO DEVICE.

003070  000000                  TEMP1::         .WORD   0               ;SOME TEMP LOCATIONS.
003072  000000                  TEMP2::         .WORD   0
003074  000000                  XXCOMM::        .WORD   0               ;XXDP+ COMM BLOCK POINTER.
003076  000000                  FREE::          .WORD   0               ;1ST FREE MEMORY ADDRESS...
003100  000000                  FRESIZ::        .WORD   0               ;...AND SIZE (IN WORDS).
003102  000000                  FREEHI:         .WORD   0               ;LAST WORD IN FREE SPACE
003104  000000                  KTFLG::         .WORD   0               ;KT11, MEM AVAIL FLAG -
                                                                        ;- .WORD        0 = <24K OR NO KT -
                                                                        ;- NZ = >24K AND KT.
003106  000000                  KTENABLE::      .WORD   0               ;SET BY TEST ROUTINES TO FLAG >28K UNDER TEST
003110  002000                  PST32W::        .WORD   2000            ;32W BLOCK ADDRESS FOR 32K START
003112  000000                  SIFLAG::        .WORD   0               ;
003114  000000                  BADDAT::        .WORD   0               ;ACTUAL DATA
003116  000000                  GDDAT::         .WORD   0               ;EXPECTED DATA
003120  000000                  LOOPFL::        .WORD   0
003122                          CTAB::                                  ;CONFIGURATION TABLES.
003122  000000                  CTABM::         .WORD   0               ;CONFIG WORK.
003124  000000                                  .WORD   0
003126  000000                                  .WORD   0
003130  000000                                  .WORD   0
003132  177777                                  .WORD   -1              ;END OF MEM TABLE.
003134                          CTABE::
                                ;ERROR STATISTICS TABLE (1 WORD PER UNIT), 64 UNITS MAX:
                                ;
                                ;       0       =       UNIT NOT TESTED
                                ;       100000  =       UNIT ONLINE, NO ERRORS
                                ;       10XXXX  =       UNIT ONLINE, ENCOUNTERED XXXX ERRORS
                                ;       160000  =       UNIT DROPPED, NON-EXISTENT DEVICE REGISTER
                                ;       160001  =       UNIT DROPPED, NOT IDLE AT START
                                ;       14XXXX  =       UNIT DROPPED, ENCOUNTERED XXXX ERRORS
                                ;
003134                          ERTABL:         .BLKW   64.
003334  000000                  ERTABE:         .WORD   0

003336  000000                  SKIPT:  .WORD   0                       ;1=SKIP SUBTEST 0=NO SKIP OF SUBTEST
```

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



                                        ;+
                                        ;NAMES OF DEVICES SUPPORTED
                                        ;-

003340                                          DEVTYP  <TK-25>
003340                                  L$DVTYP::
003340     124     113     055                  .ASCIZ  /TK-25/
                                                .EVEN

                                        ;+
                                        ;TEST DESCRIPTION
                                        ;-
003346                                          DESCRIPT <CZTKHA TK-25 FRT END FUNC #4>
003346                                  L$DESC::
003346     103     132     124                  .ASCIZ  /CZTKHA TK-25 FRT END FUNC #4/
                                                .EVEN



                                        ;+
                                        ;BIT TO ASCII CONVERSION FOR TSSR REGISTER
                                        ;-

003404  003444  003447  003453  TSSRBIT::               .WORD   1$,2$,3$,4$,5$,6$,7$,8$
003424  003505  003511  003515                          .WORD   9$,10$,11$,12$,13$,14$,15$,16$
003444     123     103     000  1$:     .ASCIZ  '[illegible]'
003447     102     111     105  2$:     .ASCIZ  'BIE'
003453     123     103     105  3$:     .ASCIZ  'SCE'
003457     122     115     122  4$:     .ASCIZ  'RMR'
003463     116     130     115  5$:     .ASCIZ  'NXM'
003467     116     102     101  6$:     .ASCIZ  'NBA'
003473     102     111     124  7$:     .ASCIZ  'BIT9'
003500     102     111     124  8$:     .ASCIZ  'BIT8'
003505     123     123     122  9$:     .ASCIZ  'SSR'
003511     117     106     114  10$:    .ASCIZ  'OFL'
003515     102     111     124  11$:    .ASCIZ  'BIT5'
003522     102     111     124  12$:    .ASCIZ  'BIT4'
003527     102     111     124  13$:    .ASCIZ  'BIT3'
003534     102     111     124  14$:    .ASCIZ  'BIT2'
003541     102     111     124  15$:    .ASCIZ  'BIT1'
003546     102     111     124  16$:    .ASCIZ  'BIT0'
                                        .EVEN
003554     124     123     123  SFIERR: .ASCIZ  'TSSR ERROR AFTER SOFT INIT'
003607     124     123     123  SFHERR: .ASCIZ  'TSSR ERROR AFTER BUS RESET'
003642     040     040     116  NXR:    .ASCIZ  /  NON-EXISTANT DEVICE REGISTER/
003701     045     101     040  NXRX:   .ASCIZ  /%A  ADDRESS: %O6/
003722     045     101     040  TSSX:   .ASCII  /%A  TSBA,TSSR EXP'D: %O6%A,%O6%N/
003762     045     101     040          .ASCIZ  /%A  TSBA,TSSR REC'D: %O6%A,%O6/
```

```
004021   045   116   045  FUSI:    .ASCII  /#N#A/
004025   040   040   125  USI:     .ASCIZ  /  UNEXPECTED INTERRUPT/
004054   040   040   111  NSI:     .ASCIZ  /  INTERRUPT EXPECTED, NOT RECEIVED/
004117   045   116   045  FNOINTR:         .ASCII  /#N#A/
004123   040   040   116  NOINTR:  .ASCIZ  /  NO INTERRUPT WAS GENERATED/
004160   040   040   111  IFAULT:  .ASCIZ  /  INTERRUPT FAULT/
004202   045   101   040  INTX:    .ASCIZ  /#A  CPU PC: #06#A  TSBA: #06/
004237   040   040   042  NOINIT:  .ASCIZ  /  "BUS-INIT" DIDN'T INITIALIZE CONTROLLER/
004311   040   040   042  NSINIT:  .ASCIZ  /  "SOFT-INIT" DIDN'T INITIALIZE THE DPU/
004361   040   040   042  BRINIT:  .ASCIZ  /  "BUS-RESET" DIDN'T INITIALIZE THE DPU/

004431   000                NUL:     .ASCIZ  //
004432   045   116   000  NULCR:   .ASCIZ  /#N/
004435   045   101   040  EXPGOT:  .ASCIZ  /#A EXP'D: #06#A, REC'D: #06/
004471   045   116   045  EXPGT2:  .ASCIZ  /#N#A EXP'D: #06#A, #06#N#A REC'D: #0#A, #06/
004545   045   101   040  DUAD12:  .ASCIZ  /#A REG(W) WRITTEN TO: #06#A REG(R) READ, EXP'D: #06#A, REC'D: #06/
004647   122   101   115  PKTRAM::         .ASCIZ  'RAM Contents Do Not Match Packet Sent'
004715   040   040   103  SCME:    .ASCIZ  /  CONFIG DOESN'T MATCH MFG. MASTER/
004760   127   122   111  WRTMSG:  .ASCIZ  'WRITE CHARACTERISTICS Failed'
005015   124   123   123  WRTERR:  .ASCIZ  'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
005110   124   123   123  RDERR:   .ASCIZ  'TSSR Incorrect After READ Command, More Bits Set Than SSR'
                                    .EVEN
```

```
                                        .SBTTL  GLOBAL ERROR REPORT SECTION

                                ;+
                                ; THE GLOBAL ERROR REPORT SECTION CONTAINS THE PRINTB AND PRINTX
                                ; CALLS THAT ARE USED IN MORE THAN ONE TEST.
                                ; ASCII TEXT STRINGS ARE FOUND IN THE GLOBAL TEXT SECTION.
                                ;-

 005202                                 BGNMSG  NXRERR                  ;NON-EXISTANT DEVICE REGISTER.
 005202                         NXRERR::
 005202                                 PRINTX  #NXRX,NODEV             ;NODEV = NEXM ADDRESS.
 005202  013746  003066                 MOV     NODEV,-(SP)
 005206  012746  003701                 MOV     #NXRX,-(SP)
 005212  012746  000002                 MOV     #2,-(SP)
 005216  010600                         MOV     SP,R0
 005220  104415                         TRAP    C$PNTX
 005222  062706  000006                 ADD     #6,SP
 005226  004737  005234                 JSR     PC,EXTEND               ; PRINT EXTENSION IF REQUIRED.
 005232                                 ENDMSG
 005232                         L10002:
 005232  104423                         TRAP    C$MSG


                                ;
                                ; THIS ROUTINE APPENDS A UNIQUE EXTENSION (IF REQUIRED)
                                ; TO ANY OF THE ABOVE ERROR SIGNATURES.
                                ;
 005234  005727                 EXTEND: TST     (PC)+
 005236  000000                 EXTA:   0                               ; 0 = NO EXTENSION.
 005240  001402                         BEQ     1$
 005242  004777  177770                 JSR     PC,@EXTA                ; APPEND EXTENSION TEXT.
 005246                         1$:     PRINTX  #NULCR                  ; PRINT A BLANK LINE
 005246  012746  004432                 MOV     #NULCR,-(SP)
 005252  012746  000001                 MOV     #1,-(SP)
 005256  010600                         MOV     SP,R0
 005260  104415                         TRAP    C$PNTX
 005262  062706  000004                 ADD     #4,SP
 005266  000207                         RTS     PC
```

```
                                        .SBTTL  PRITSSR - PRINT TSSR CONTENTS

                                ;+
                                ;
                                ;ROUTINE TO DISPLAY THE CONTENTS, AND BIT DEFINITIONS, OF
                                ;THE TSSR REGISTER. THIS ROUTINE IS NORMALLY CALLED ONLY
                                ;BY A MESSAGE PRINTING ROUTINE
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      CONTENTS OF TSSR
                                ;
                                ;SUBORDINATE ROUTINES:
                                ;
                                ;       CHKAMB  CHECK FOR AMBIGUOUS CONTENTS
                                ;
                                ;-

005270                          PRITSSR:
005270                                  SAVREG                          ;SAVE GENERAL REGISTERS
005272  010104                          MOV     R1,R4                   ;SAVE THE TSSR CONTENTS
005276                                  PRINTB  #TSSRFOR,R4             ;PRINT THE CONTENTS OF TSSR
005276  010446                          MOV     R4,-(SP)
005300  012746  005112                  MOV     #TSSRFOR,-(SP)
005304  012746  000002                  MOV     #2,-(SP)
005310  010600                          MOV     SP,R0
005312  104414                          TRAP    C$PNTB
005314  062706  000006                  ADD     #6,SP
005320  010400                          MOV     R4,R0                   ;GET TSSR BACK FOR CHKAMB
005322  004737  016720                  JSR     PC,CHKAMB               ;ARE CONTENTS AMBIGUOUS ?
005326  103410                          BCS     5$                      ;BRANCH IF NOT
005330                                  PRINTX  #AMBTSSR                ;SHOW CONTENTS ARE AMBIGUOUS
005330  012746  006332                  MOV     #AMBTSSR,-(SP)
005334  012746  000001                  MOV     #1,-(SP)
005340  010600                          MOV     SP,R0
005342  104415                          TRAP    C$PNTX
005344  062706  000004                  ADD     #4,SP
005350  010403                  5$:     MOV     R4,R3                   ;CONTENTS OF TSSR
005352  042703  001476                  BIC     #HIADDR!FATERR!TERCLS,R3        ;CLEAR ALL MULTIPLE BIT FIELDS
005356  001434                          BEQ     20$                     ;NO BITS ARE SET
005360  012702  002600                  MOV     #TMPBFR,R2              ;TEMPORARY ASCII BUFFER
005364  012701  003404                  MOV     #TSSRBIT,R1             ;ASCII EQUIVALENT OF BITS
005370  005703                  10$:    TST     R3                      ;REMAINING BITS TO CONVERT
005372  001413                          BEQ     15$                     ;BRANCH WHEN ALL ARE DONE
005374  000241                          CLC                             ;CLEAR CARRY FOR SHIFT
005376  006103                          ROL     R3                      ;SHIFT NEXT BIT TO CARRY
005400  103006                          BCC     13$                     ;BRANCH IF BIT NOT SET
005402  011100                          MOV     (R1),R0                 ;POINTER TO BIT DEFINITION
005404  112022                  11$:    MOVB    (R0)+,(R2)+             ;MOVE ASCIZ TO BUFFER
005406  001376                          BNE     11$                     ;MOVE ALL BITS
005410  112762  000054  177777          MOVB    #',,-1(R2)              ;INSERT A COMMA TO TERMINATE
005416  005721                  13$:    TST     (R1)+                   ;POINT TO NEXT DESCRIPTION
005420  000763                          BR      10$                     ;GET THE REMAINING BITS
005422  105042                  15$:    CLRB    -(R2)                   ;TERMINATE THE LINE
005424                                  PRINTX  #TSSDEF,#TMPBFR         ;PRINT THE BIT DEFINITIONS
005424  012746  002600                  MOV     #TMPBFR,-(SP)
005430  012746  006303                  MOV     #TSSDEF,-(SP)
```

```
        005434  012746  000002                  MOV     #2,-(SP)
        005440  010600                          MOV     SP,R0
        005442  104415                          TRAP    C$PNTX
        005444  062706  000006                  ADD     #6,SP
   1490
   1491 005450  010403                  20$:    MOV     R4,R3                   ;GET THE TSSR CONTENTS
   1492 005452  042703  177761                  BIC     #^CTERCLS,R3            ;CLEAR ALL BUT TERMINATION
   1493 005456  016303  006374                  MOV     TCOCOD(R3),R3           ;GET THE TERMINATION CODE MEANING
   1494 005462                                  PRINTX  #TCOASC,R3              ;PRINT THE TERMINATION CODE
        005462  010346                          MOV     R3,-(SP)
        005464  012746  006173                  MOV     #TCOASC,-(SP)
        005470  012746  000002                  MOV     #2,-(SP)
        005474  010600                          MOV     SP,R0
        005476  104415                          TRAP    C$PNTX
        005500  062706  000006                  ADD     #6,SP
   1495 005504  010403                          MOV     R4,R3                   ;TSSR CONTENTS AGAIN
   1496 005506  042703  177717                  BIC     #^CFATERR,R3            ;CLEAR ALL BUT FATAL TERMINATION
   1497 005512  001421                          BEQ     25$                     ;DON'T PRINT IF ZERO
   1498 005514  006203                          ASR     R3
   1499 005516  006203                          ASR     R3
   1500 005520  006203                          ASR     R3                      ;ALINE TERMINATION CODE FOR INDEX
   1501 005522  016303  006734                  MOV     TSFCOD(R3),R3           ;GET THE FATAL TERMINATION CODE
   1502 005526                                  PRINTX  #TFCASC,R3              ;PRINT THE FATAL TERMINATION CODE
        005526  010346                          MOV     R3,-(SP)
        005530  012746  006234                  MOV     #TFCASC,-(SP)
        005534  012746  000002                  MOV     #2,-(SP)
        005540  010600                          MOV     SP,R0
        005542  104415                          TRAP    C$PNTX
        005544  062706  000006                  ADD     #6,SP
   1503 005550  012737  000031  002172          MOV     #25.,FATFLG             ;DROP THIS UNIT AFTER ERROR MESSAGE
   1504 005556  010403                  25$:    MOV     R4,R3                   ;GET TSSR CONTENTS
   1505 005560  042703  176377                  BIC     #^CHIADDR,R3            ;CLEAR ALL BUT EXTENDED ADDRESS
   1506 005564  001411                          BEQ     30$                     ;DON'T PRINT IF ZERO
   1507 005566                                  PRINTX  #TEXASC,R3              ;PRINT THE EXTENDED ADDRESS BITS
        005566  010346                          MOV     R3,-(SP)
        005570  012746  006132                  MOV     #TEXASC,-(SP)
        005574  012746  000002                  MOV     #2,-(SP)
        005600  010600                          MOV     SP,R0
        005602  104415                          TRAP    C$PNTX
        005604  062706  000006                  ADD     #6,SP
   1508 005610  022704  100210          30$:    CMP     #100210,R4              ;CHECK FOR MEDIA ERROR
   1509 005614  001003                          BNE     31$                     ;BR, IF PROBABLY NOT TAPE ERROR
   1510 005616  012737  006021  002150          MOV     #EPRT3,EPRTSW           ;"PROBABLY MEDIA RELETED ERROR - BAD TAPE"
   1511 005624  005737  002150          31$:    TST     EPRTSW                  ;CHECK FOR THE SWITCH EMPTY
   1512 005630  001003                          BNE     310$                    ;BR, IF SWITCH IS NOT EMPTY
   1513 005632  012737  005676  002150          MOV     #EPRT1,EPRTSW           ;SET SWITCH TO DEFAULT
   1514 005640  013737  002150  005650  310$:   MOV     EPRTSW,32$+2            ;PUT REAL SWITCHABLE MESSAGE IN PLACE
   1515 005646                          32$:    PRINTB  #EPRT1                  ;PRINT THE ERROR MESSAGE
        005646  012746  005676                  MOV     #EPRT1,-(SP)
        005652  012746  000001                  MOV     #1,-(SP)
        005656  010600                          MOV     SP,R0
NSPO    005660  104414                          TRAP    C$PNTB
        005662  062706  000004                  ADD     #4,SP
   1516 005666  012737  005676  002150          MOV     #EPRT1,EPRTSW           ;RESET TO NORMAL ERROR POINTER
   1517 005674  000207                          RTS     PC                      ;RETURN TO CALLER
   1518
   1519 005676     045     116     045  EPRT1:  .ASCIZ  '%N%A *****CHECK TRANSPORT******%S'
```

```
005737     045     116     045  EPRT2:   .ASCIZ  '%N%A *****CHECK PARITY SWITCH IN TRANSPORT*****%S'
006021     045     116     045  EPRT3:   .ASCIZ  '%N%A *****POSSIBLE MEDIA RELATED ERROR - BAD TAPE*****%S'
006112     045     116     045  TSSRFOR:         .ASCIZ  '%N%A TSSR = %O6'
006132     045     116     045  TEXASC:          .ASCIZ  '%N%A Extended Address Bits = %O6'
006173     045     116     045  TCOASC:          .ASCIZ  '%N%A Termination Class Code = %T'
006234     045     116     045  TFCASC:          .ASCIZ  '%N%A Fatal Termination Class Code = %T'
006303     045     116     045  TSSDEF:          .ASCIZ  '%N%A TSSR Bits Set: %T'
006332     045     116     045  AMBTSSR:         .ASCIZ  '%N%A TSSR Contents Are Ambiguous'
                                       .EVEN
006374  006414  006437  006465  TCOCOD:  .WORD   1$,2$,3$,4$,5$,6$,7$,8$
006414     116     157     162  1$:      .ASCIZ  'Normal Termination'
006437     124     145     162  2$:      .ASCIZ  'Termination Condition'
006465     124     141     160  3$:      .ASCIZ  'Tape Status Alert'
006507     106     165     156  4$:      .ASCIZ  'Function Reject'
006527     122     145     143  5$:      .ASCIZ  'Recoverable Error - Tape Position One Record Down'
006611     122     145     143  6$:      .ASCIZ  'Recoverable Error - Tape Was Not Moved'
006660     125     156     162  7$:      .ASCIZ  'Unrecoverable Error'
006704     106     141     164  8$:      .ASCIZ  'Fatal Controller Error'
                                       .EVEN

006734  006744  007000  007011  TSFCOD:  .WORD   1$,2$,3$,4$
006744     111     156     164  1$:      .ASCIZ  'Internal Diagnostic Failure'
007000     122     145     163  2$:      .ASCIZ  'Reserved'
007011     102     165     163  3$:      .ASCIZ  'Bus Interface or Sanity Check Error'
007055     122     145     163  4$:      .ASCIZ  'Reserved'
                                       .EVEN
```

```
                                        .SBTTL  PRIPKT  - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET

                                ;+
                                ;THIS ROUTINE PRINTS THE ADDRESS AND CONTENTS OF A COMMAND PACKET.
                                ;THIS ROUTINE IS NORMALLY ONLY CALLED FROM A PRINT ROUTINE.
                                ;
                                ;INPUT:
                                ;
                                ;       R0      NUMBER OF WORDS IN PACKET
                                ;       R3      HIGH ORDER COMMAND PACKET ADDRESS
                                ;       R4      ADDRESS OF COMMAND PACKET
                                ;
                                ;       NOTE:   R3 IS IGNORED IF THE KTENABLE FLAG IS CLEAR.
                                ;-

007066                          PRIPKT::
007066                                  SAVREG                          ;SAVE THE REGISTERS
007072  010005                          MOV     R0,R5                   ;SAVE NO. OF WORDS IN PACKET
007074  005737  003106                  TST     KTENABLE                ;ABOVE 28K UNDER TEST?
007100  001001                          BNE     10$                     ;BR IF YES
007102  005003                          CLR     R3                      ;SET HIGH ORDER ADDRESS TO 0
007104  010301                  10$:    MOV     R3,R1                   ;COPY HIGH ORDER ADDRESS
007106  010400                          MOV     R4,R0                   ;GET LOWER ADDRESS
007110  006100                          ROL     R0                      ;SHIFT BIT 15 INTO C BIT
007112  006101                          ROL     R1                      ;AND INTO HIGH ORDER.
007114                                  PRINTB  #PKTADD,R1,R4           ;PRINT PACKET ADDRESS
007114  010446                          MOV     R4,-(SP)
007116  010146                          MOV     R1,-(SP)
007120  012746  007272                  MOV     #PKTADD,-(SP)
007124  012746  000003                  MOV     #3,-(SP)
007130  010600                          MOV     SP,R0
007132  104414                          TRAP    C$PNTB
007134  062706  000010                  ADD     #10,SP
007140  010300                  15$:    MOV     R3,R0                   ;GET HIGH ORDER ADDRESS
007142  001404                          BEQ     20$                     ;BR IF NOT ABOVE 28K.
007144  010401                          MOV     R4,R1                   ;GET LOW ORDER ADDRESS
007146  004737  020274                  JSR     PC,SETMAP               ;SETUP PAR6 MAPPING FOR 18 BIT ADDRESS
007152  010004                          MOV     R0,R4                   ;GET RETURNED PAR6 ADDRESS BIAS
007154  005001                  20$:    CLR     R1                      ;SAVE WORD NUMBER
007156  012402                  25$:    MOV     (R4)+,R2                ;GET PACKET CONTENTS
007160                                  PRINTB  #PKTFRM,R1,R2           ;PRINT THE DATA
007160  010246                          MOV     R2,-(SP)
007162  010146                          MOV     R1,-(SP)
007164  012746  007234                  MOV     #PKTFRM,-(SP)
007170  012746  000003                  MOV     #3,-(SP)
007174  010600                          MOV     SP,R0
007176  104414                          TRAP    C$PNTB
007200  062706  000010                  ADD     #10,SP
007204  005201                          INC     R1                      ;NEXT WORD NUMBER
007206  020105                          CMP     R1,R5                   ;DONE ALL PACKET WORDS?
007210  002762                          BLT     25$                     ;LOOP TILL ALL DONE
007212                                  PRINTB  #PKTNEW                 ;JUST A COUPLE NEW LINES
007212  012746  007327                  MOV     #PKTNEW,-(SP)
007216  012746  000001                  MOV     #1,-(SP)
007222  010600                          MOV     SP,R0
007224  104414                          TRAP    C$PNTB
007226  062706  000004                  ADD     #4,SP
```

```
007232  000207                          RTS     PC              ;RETURN

007234     045     116     045  PKTFRM: .ASCIZ  '%N%A Packet Word Ø%D1%A = %06'
007272     045     116     045  PKTADD: .ASCIZ  '%N%A Packet Address = %01%05'

007327     045     116     045  PKTNEW: .ASCIZ  '%N%N%A  '
                                        .EVEN
```

```
                                        .SBTTL  PRIBXOR - PRINT EXPD, RECV AND XOR BYTE

                                ;+
                                ;
                                ;PRINT EXPECTED DATA, RECEIVED DATA, AND XOR OF THE DATA BYTE
                                ;THIS ROUTINE IS NORMALLY CALLED ONLY FOR PRINT ROUTINES.
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
                                ;
                                ;OUTPUT:
                                ;
                                ;       R0      XOR OF EXPECTED/RECEIVED DATA
                                ;
                                ;-

                                PRIBXOR::
007340                                  SAVREG                          ;SAVE THE REGISTERS
007340  010203                          MOV     R2,R3                   ;EXPECTED DATA
007344                                  XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007346  012700  177400                  MOV     #^C<377>,R0             ;BYTE MASK
007356  040001                          BIC     R0,R1                   ;SAVE LOW BYTE RECV
007362  040002                          BIC     R0,R2                   ;SAVE LOW BYTE EXPD
007364  040003                          BIC     R0,R3                   ;SAVE LOW BYTE XOR
007366                                  PRINTB  #XORBFOR,R2,R1,R3       ;PRINT THE MESSAGE
007370  010346                          MOV     R3,-(SP)
007372  010146                          MOV     R1,-(SP)
007374  010246                          MOV     R2,-(SP)
007376  012746  007422                  MOV     #XORBFOR,-(SP)
007402  012746  000004                  MOV     #4,-(SP)
007406  010600                          MOV     SP,R0
007410  104414                          TRAP    C$PNTB
007412  062706  000012                  ADD     #12,SP
007416  010300                          MOV     R3,R0                   ;R0 HAS XOR ON RETURN
007420  000207                          RTS     PC                      ;RETURN TO CALLER

007422     045     116     045  XORBFOR:        .ASCIZ  '%N%A EXPD: %O3%A RECV: %O3%A XOR: %O3'
                                        .EVEN
```

```
                                        .SBTTL  PRIXOR  - PRINT EXPD, RECV AND XOR

                                ;+
                                ;
                                ;PRINT EXPECTED DATA, RECEIVED DATA, AND XOR OF THE TWO
                                ;THIS ROUTINE IS NORMALLY CALLED ONLY FOR PRINT ROUTINES.
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
                                ;
                                ;OUTPUT:
                                ;
                                ;       R0      XOR OF EXPECTED/RECEIVED DATA
                                ;
                                ;-

007470                          PRIXOR::
007470                                  SAVREG                          ;SAVE THE REGISTERS
007474  010203                          MOV     R2,R3                   ;EXPECTED DATA
007476                                  XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007506                                  PRINTB  #XORFOR,R2,R1,R3 ;PRINT THE MESSAGE
007506  010346                          MOV     R3,-(SP)
007510  010146                          MOV     R1,-(SP)
007512  010246                          MOV     R2,-(SP)
007514  012746  007540                  MOV     #XORFOR,-(SP)
007520  012746  000004                  MOV     #4,-(SP)
007524  010600                          MOV     SP,R0
007526  104414                          TRAP    C$PNTB
007530  062706  000012                  ADD     #12,SP
007534  010300                          MOV     R3,R0                   ;R0 HAS XOR ON RETURN
007536  000207                          RTS     PC                      ;RETURN TO CALLER

007540     045     116     045  XORFOR: .ASCIZ  '%N%A EXPD: %O6%A RECV: %O6%A XOR: %O6'
                                        .EVEN
```

```
                                        .SBTTL  PRIEQU  - PRINT BIT NUMBERS AS ASCII EQUIVALENT

                                ;+
                                ;
                                ;ROUTINE TO CONVERT BIT VALUES TO ASCII AND PRINT THE STRING
                                ;THIS ROUTINE IS NORMALLY CALLED FROM A PRINT ROUTINE
                                ;
                                ;INPUTS:
                                ;
                                ;       R0      OCTAL VALUE TO CONVERT
                                ;       R1      TABLE OF POINTERS TO ASCII EQUIVALENT
                                ;
                                ;-

007606                          PRIEQU:
007606                                  SAVREG                          ;SAVE THE REGISTERS
007612  000207                          RTS     PC                      ;RETURN TO CALLER



                                        .SBTTL  PRIRAM  - PRINT RAM ADDRESS
                                ;+
                                ;
                                ;PRINT CONTROLLER RAM ADDRESS.
                                ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
                                ;
                                ;INPUTS:
                                ;
                                ;       R4      RAM ADDRESS
                                ;
                                ;-
007614                          PRIRAM:
007614                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
007620                                  PRINTB  #RAMFOR,R4              ;PRINT RAM ADDRESS IN ERROR
007620  010446                          MOV     R4,-(SP)
007622  012746  007644                  MOV     #RAMFOR,-(SP)
007626  012746  000002                  MOV     #2,-(SP)
007632  010600                          MOV     SP,R0
007634  104414                          TRAP    C$PNTB
007636  062706  000006                  ADD     #6,SP
007642  000207                          RTS     PC                      ;RETURN

007644     045     116     045  RAMFOR: .ASCIZ  '*N*A CONTROLLER RAM ADDRESS = *0C'
                                        .EVEN



                                        .SBTTL  PRIADD  - PRINT MEMORY ERROR ADDRESS
                                ;+
                                ;
                                ;PRINT MEMORY ADDRESS
                                ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
                                ;
                                ; IMPLICIT INPUTS
                                ;
                                ;       ERRHI   - HIGH ORDER ADDRESS
                                ;       ERRLO   - LOW ORDER ADDRESS
```

```
                                        ;
                                        ;-
007706                                  PRIADD:
007706                                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
007712  013700  002204                          MOV     ERRHI,R0                ;GET HIGH ADDRESSS
007716  013701  002206                          MOV     ERRLO,R1                ;GET LOW ADDRESS
007722  010102                                  MOV     R1,R2                   ;COPY LOW ADDRESS
007724  006101                                  ROL     R1                      ;SHIFT BIT 15 TO C BIT
007726  006100                                  ROL     R0                      ;SHIFT INTO HIGH ORDER
007730                                          PRINTB  #PRIA0,R0,R2            ;PRINT MEMORY ADDRESS IN ERROR
007730  010246                                  MOV     R2,-(SP)
007732  010046                                  MOV     R0,-(SP)
007734  012746  007756                          MOV     #PRIA0,-(SP)
007740  012746  000003                          MOV     #3,-(SP)
007744  010600                                  MOV     SP,R0
007746  104414                                  TRAP    C$PNTB
007750  062706  000010                          ADD     #10,SP
007754  000207                                  RTS     PC                      ;RETURN

007756     045     116     045  PRIA0:          .ASCIZ  '%N%A MEMORY ERROR ADDRESS = %O1%O5'
                                                .EVEN


                                                .SBTTL  PRITADD - PRINT MEMORY TEST ADDRESS
                                        ;+
                                        ;
                                        ;PRINT MEMORY ADDRESS
                                        ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
                                        ;
                                        ; IMPLICIT INPUTS
                                        ;
                                        ;       ERRHI   - HIGH ORDER ADDRESS
                                        ;       ERRLO   - LOW ORDER ADDRESS
                                        ;
                                        ;-
010022                                  PRITADD:
010022                                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
010026  013700  002204                          MOV     ERRHI,R0                ;GET HIGH ADDRESSS
010032  013701  002206                          MOV     ERRLO,R1                ;GET LOW ADDRESS
010036  010102                                  MOV     R1,R2                   ;COPY LOW ADDRESS
010040  006101                                  ROL     R1                      ;SHIFT BIT 15 TO C BIT
010042  006100                                  ROL     R0                      ;SHIFT INTO HIGH ORDER
010044                                          PRINTB  #PRIT0,R0,R2            ;PRINT MEMORY ADDRESS IN ERROR
010044  010246                                  MOV     R2,-(SP)
010046  010046                                  MOV     R0,-(SP)
010050  012746  010072                          MOV     #PRIT0,-(SP)
010054  012746  000003                          MOV     #3,-(SP)
010060  010600                                  MOV     SP,R0
010062  104414                                  TRAP    C$PNTB
010064  062706  000010                          ADD     #10,SP
010070  000207                                  RTS     PC                      ;RETURN

010072     045     116     045  PRIT0:          .ASCIZ  '%N%A MEMORY TEST ADDRESS = %O1%O5'
                                                .EVEN
```

```
                                        .SBTTL  SPACE   - SPACE RECORDS (FORWARD AND REVERSE) COMMAND

                                ;+
                                ;
                                ;ROUTINE TO ISSUE A SPACE RECORDS
                                ;COMMAND (FORWARD OR REVERSE)
                                ;
                                ;INPUT:
                                ;
                                ;       R3      NUMBER OF RECORDS TO BE SPACED OVER
                                ;               BIT15 CONTROLS DIRECTION
                                ;               BIT15 = 0 IS FORWARD
                                ;               BIT15 = 1 IS REVERSE
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;
                                ;       REQUIRES A WRITE CHARACTERISTICS DONE PREVIOUSLY
                                ;
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - SPACE RECORDS COMMAND OK
                                ;               CLR - SPACE RECORDS FAILED
                                ;
                                ;
                                ;       R0      THE CONTENTS OF R4 IS MOVED TO R0
                                ;
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       TAPE HAS BEEN MOVED
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;
                                ;-

010134                          SPACE::
010134                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
010140  012737  000764  010330          MOV     Ø500.,SDELAY            ;SET UP DELAY
010146  012737  140010  010320          MOV     Ø140010,80$             ;SET UP COMMAND, SPACE FORWARD
010154  005703                          TST     R3                      ;CHECK FOR DIRECTION
010156  100403                          BMI     5$                      ;BR, IF REVERSE INDICATED
010160  010337  010322                  MOV     R3,90$                  ;LOAD UP NUMBER OF RECORDS TO SPACE
010164  000407                          BR      10$                     ;GO DO COMMAND
010166  042703  100000          5$:     BIC     ØBIT15,R3               ;CLEAR DIRECTION BIT
010172  010337  010322                  MOV     R3,90$                  ;LOAD UP NUMBER OF RECORDS TO SPACE
010176  052737  000400  010320          BIS     ØBIT8,80$               ;SET REVERSE BIT IN COMMAND PACKET
010204  012704  010320          10$:    MOV     Ø80$,R4                 ;SET UP R4 WITH PACKET ADDRESS
010210  010465  177776                  MOV     R4,TSDB(R5)             ;SEND OUT COMMAND
010214  004737  017124          15$:    JSR     PC,WAITF                ;WAIT FOR SSR
010220  103420                          BCS     20$                     ;BR, IF SSR IS SET AND OK
010222                                  DELAY   250                     ;DELAY ABOUT .25 SECONDS
010222  012727  000250                  MOV     Ø250,(PC)+
010226  000000                          .WORD   0
010230  013727  002116                  MOV     L$DLY,(PC)+
010234  000000                          .WORD   0
010236  005367  177772                  DEC     -6(PC)
010242  001375                          BNE     .-4
```

```
        010244  005367  177756                  DEC     -22(PC)
        010250  001367                          BNE     .-20
   1803 010252  005337  010330                  DEC     SDELAY          ;BUMP DELAY COUNTER DOWN
   1804 010256  001356                          BNE     15$             ;BR, IF MORE DELAY
   1805 010260  000411                          BR      60$             ;BR IF TROUBLE CARRY = CLEAR
   1806 010262  016501  000000          20$:    MOV     TSSR(R5),R1     ;READ TSSR
   1807 010266  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
   1808 010272  020201                  25$:    CMP     R2,R1           ;ARE THEY OK
   1809 010274  001401                          BEQ     40$             ;BR, IF EQUAL = OK
   1810 010276  000402                          BR      60$             ;TROUBLE EXIT
   1811 010300  000261                  40$:    SEC                     ;SET CARRY NO TROUBLE
   1812 010302  000401                          BR      70$             ;EXIT
   1813 010304  000241                  60$:    CLC                     ;CARRY CLEAR = ERROR
   1814 010306                          70$:
   1815 010306  010400                          MOV     R4,R0           ;PASS PACKET ADDRESS
   1816 010310  000207                          RTS     PC              ;RETURN
```

```
                                        ;
                                        ;
                                        ;
                                        ;PACKET FOR SPACE COMMAND
                                        ;
010312                                          .BLKB   10-<.-TUV2A&7>
                                        ;
                                        ;COMMAND WORD
010320  000000                          80$:    .WORD
                                        ;NUMBER OF RECORDS TO BE SPACED OVER WORD
010322  000000                          90$:    .WORD
010324  000000                                  .WORD
010326  000000                                  .WORD
010330  000000                          SDELAY: .WORD   0               ;DELAY COUNTER
                                                .EVEN
```

```
                                        .SBTTL  WRTCHR  - WRITE CHARACTERISTICS COMMAND

                                ;+
                                ;
                                ;ROUTINE TO ISSUE A WRITE CHARACTERISTICS
                                ;COMMAND SO THAT OTHER COMMANDS WILL BE ACCEPTED
                                ;
                                ;INPUT:
                                ;
                                ;       R4      ADDRESS OF PACKET FROM TEST
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;       REQUIRES A CALL TO SOFINIT BE DONE PREVIOUSLY
                                ;
                                ;OUTPUT:
                                ;
                                ;       R0      TSSR CONTENTS
                                ;       CARRY   SET - WRITE CHARACTERISTICS COMMAND OK
                                ;               CLR - WRITE CHARACTERISTICS FAILED
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       MESSAGE BUFFER AND OTHER BUFFERS ALL SET UP
                                ;       SOFTWARE SWITCHES SET AS FOLLOWS:
                                ;               BENBSW = BUFFER ENABLE SWITCH ON OR OFF
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;
                                ;-

010332                          WRTCHR::
010332                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
010336  005037  002176                  CLR     BENBSW                  ;CLEAR BUFFER ENABLE SWITCH
010342  010465  177776          10$:    MOV     R4,TSDB(R5)             ;SEND OUT COMMAND
010346  004737  017242                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
010352  103401                          BCS     20$                     ;BR. IF SSR IS SET AND OK
010354  000423                          BR      60$                     ;BR IF TROUBLE CARRY = CLEAR
010356  016501  000000          20$:    MOV     TSSR(R5),R1             ;READ TSSR
010362  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
010366  032701  000100                  BIT     #OFL,R1                 ;WAS OFF LINE SET IN TSSR
010372  001402                          BEQ     25$                     ;BR. IF NO OFL SET
010374  052702  000100                  BIS     #OFL,R2                 ;MAKE THEM LOOK ALIKE
010400  020201                  25$:    CMP     R2,R1                   ;ARE THEY OK
010402  001401                          BEQ     40$                     ;BR. IF EQUAL - OK
010404  000407                          BR      60$                     ;TROUBLE EXIT
010406  062704  000010          40$:    ADD     #8.,R4                  ;POINT TO WRT CHARA DATA PACKET
010412  011403                          MOV     (R4),R3                 ;GET ADDRESS OF MESSAGE BUFFER
010414  010337  002720                  MOV     R3,MESBFA               ;STORE FOR PRINT ROUTINES
010420  000261                          SEC                             ;SET CARRY NO TROUBLE
010422  000401                          BR      70$                     ;EXIT
010424  000241                  60$:    CLC                             ;CARRY CLEAR - ERROR
010426  016500  000000          70$:    MOV     TSSR(R5),R0             ;RETURN TSSR CONTENTS
010432  000207                          RTS     PC                      ;RETURN
```

```
                                        .SBTTL  REWIND  - POSITION TAPE (REWIND) COMMAND

                                ;+
                                ;
                                ;THIS ROUTINE WILL REWIND THE SELECTED TAPE.
                                ;
                                ;       CAUTION: THE ROUTINE DOES NOT WAIT FOR BOT
                                ;                TO ARRIVE. ALSO THE CALLER MUST CHECK FOR
                                ;                SSR TO SET IN THE TSSR
                                ;
                                ;
                                ;CALLING SEQUENCE:
                                ;
                                ;       DO A SOFT INIT
                                ;       DO A WRITE CHARACTERISTICS
                                ;       JSR     PC,REWIND
                                ;
                                ;INPUT:
                                ;
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;
                                ;
                                ;OUTPUT
                                ;
                                ;       R0      THE CONTENTS OF R4 IS PASSED TO R0
                                ;
                                ;-
010434                          REWIND::
010434                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
010440  012704  010530                  MOV     #RWPACK,R4              ;GET PACKET ADDRESS
010444  010465  177776                  MOV     R4,TSDB(R5)             ;SEND PACKET ADDRESS TO EXECUTE
010450  012703  000550                  MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
010454  004737  017124          10$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
010460  103417                          BCS     20$                     ;LEAVE WHEN SSR IS SET
010462                                  DELAY   250.                    ;WAIT FOR .25 SECONDS
010462  012727  000372                  MOV     #250.,(PC)+
010466  000000                          .WORD   0
010470  013727  002116                  MOV     L$DLY,(PC)+
010474  000000                          .WORD   0
010476  005367  177772                  DEC     -6(PC)
010502  001375                          BNE     .-4
010504  005367  177756                  DEC     -22(PC)
010510  001367                          BNE     .-20
010512  005303                          DEC     R3                      ;BUMP COUNTER DOWN
010514  001357                          BNE     10$                     ;KEEP GOING
010516  000241                          CLC                             ;CLEAR CARRY TO SET ERROR
010520  010400                  20$:    MOV     R4,R0                   ;PASS THE PACKET ADDRESS
010522  000207                          RTS     PC                      ;RETURN
010524                                  .BLKB   10-<.-TUV2A&7>
010530                          RWPACK:
010530  102010                          .WORD   102010                  ;POSTION COMMAND (REWIND)
010532  000000                          .WORD   0                       ;NOT USED
```

```
                                        .SBTTL  CKRAM   - COMPARE RAM TO I/O PACKET

                                ;+
                                ;
                                ;ROUTINE TO READ THE FIRST 8 BYTES FROM RAM
                                ;MEMORY AND COMPARE THIS DATA TO A COMMAND PACKET.
                                ;
                                ;INPUT:
                                ;
                                ;       R4      ADDRESS OF THE COMMAND PACKET
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - RAM MATCHES PACKET
                                ;               CLR - RAM DOES NOT MATCH PACKET
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       THE TABLE RAMDATA IS FILLED WITH THE
                                ;       DATA HELD IN RAM.
                                ;       RAMSIZ IS SET TO 8. FOR PRAMPKT ROUTINE
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;-

010534                          CKRAM::
010534                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
010540  012701  002210                  MOV     @RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
010544  012702  000020                  MOV     @RMPKTBEG,R2            ;BYTE ADDRESS OF FIRST RAM DATA
010550  005003                          CLR     R3                      ;CLEAR THE ERROR FLAG
010552  004737  017242                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
010556  004737  017242          10$:    JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
010562  110265  177777                  MOVB    R2,TSDBH(R5)            ;SELECT NEXT RAM ADDRESS
010566  004737  017242                  JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
010572  116511  177776                  MOVB    TSBAL(R5),(R1)          ;READ THE RAM DATA
010576  122124                          CMPB    (R1)+,(R4)+             ;COMPARE TO EXPECTED
010600  001401                          BEQ     20$                     ;BRANCH IF OK
010602  005203                          INC     R3                      ;SET ERROR FLAG
010604  005202                  20$:    INC     R2                      ;ADDRESS OF NEXT RAM LOCATION
010606  020227  000027                  CMP     R2,@RMPKTEND            ;REACHED END YET ?
010612  003761                          BLE     10$                     ;BRANCH TILL ALL READ
010614  005703                          TST     R3                      ;WAS AN ERROR FOUND ?
010616  001402                          BEQ     30$                     ;BRANCH IF NOT
010620  000241                          CLC                             ;CLEAR CARRY TO SHOW ERROR
010622  000401                          BR      50$                     ;AND EXIT
010624  000261                  30$:    SEC                             ;SHOW GOOD COMPARE
010626  012737  000010  002250  50$:    MOV     #8.,RAMSIZ              ;SETUP RAMSIZ FOR PRAMPKT ROUTINE
010634  000207                          RTS     PC                      ;RETURN
```

```
                                        .SBTTL RAMER - READ AND DISPLAY SELECTED RAM
                                ;+
                                ;
                                ;ROUTINE TO READ THE SELECTED RAM LOCATIONS
                                ;
                                ;INPUT:
                                ;
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;       CONSOLE WILL ALSO BE PRINTED TO
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       THE TABLE RAMDATA IS FILLED WITH THE
                                ;       DATA HELD IN RAM.
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;
                                ;-

010636                          RAMER::
010636                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
010642  013705  011022                  MOV     RAMR5H,R5       ;RESET R5 TO FIRST DEVICE REGISTER
010646  012701  002210                  MOV     #RAMDATA,R1     ;ADDRESS TO SAVE THE RAM DATA
010652  013702  011020                  MOV     RAMHLD,R2       ;BYTE ADDRESS OF THE FIRST RAM DATA
010656  013703  002250                  MOV     RAMSIZ,R3       ;SET THE SIZE OF THE READ UP
010662  004737  017242          10$:    JSR     PC,CHKTSSR      ;WAIT FOR THE SSR TO SET
010666  110265  177777                  MOVB    R2,TSDBH(R5)    ;SELECT NEXT RAM ADDRESS
010672  004737  017242                  JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
010676  116521  177776                  MOVB    TSBAL(R5),(R1)+ ;READ THE RAM DATA
010702  062702  000001          20$:    ADD     #1,R2           ;ADDRESS OF THE NEXT RAM LOCATION
010706  077313                          SOB     R3,10$          ;NUMBER OF LOCATIONS COUNTER
010710  013704  002250                  MOV     RAMSIZ,R4       ;GET THE RAM SIZE
010714  013702  011020                  MOV     RAMHLD,R2       ;GET THE STARTING RAM ADDRESS
010720  060204                          ADD     R2,R4           ;CALCULATE THE END ADDRESS
010722  162704  000001                  SUB     #1,R4           ;CORRECT VALUE OF PRINTOUT
010726                                  PRINTX  #RAMIOP,R2,R4   ;RAM ADDRESS = 10 - 17, ETC.
010726  010446                          MOV     R4,-(SP)
010730  010246                          MOV     R2,-(SP)
010732  012746  011024                  MOV     #RAMIOP,-(SP)
010736  012746  000003                  MOV     #3,-(SP)
010742  010600                          MOV     SP,R0
010744  104415                          TRAP    C$PNTX
010746  062706  000010                  ADD     #10,SP
010752  012701  002210                  MOV     #RAMDATA,R1     ;ADDRESS OF WHERE RAM DATA IS
010756  013703  002250                  MOV     RAMSIZ,R3       ;THE SIZE OF THE RAM FIELD READ
010762  005004                  30$:    CLR     R4              ;NO EXTRA DATA LEFT OVER
010764  112104                          MOVB    (R1)+,R4        ;PICK UP BYTE OF RAM DATA
010766  042704  177400                  BIC     #177400,R4      ;GET RID OF SIGN EXTEND
010772                                  PRINTX  #RAMPD,R4       ;"010 211 111 222 377 000 123 134 ETC."
010772  010446                          MOV     R4,-(SP)
010774  012746  011075                  MOV     #RAMPD,-(SP)
011000  012746  000002                  MOV     #2,-(SP)
011004  010600                          MOV     SP,R0
011006  104415                          TRAP    C$PNTX
011010  062706  000006                  ADD     #6,SP
011014  077316                          SOB     R3,30$          ;LOOP UNTIL ALL PRINTED
```

```
011016  000207                  50$:    RTS     PC              ;RETURN

011020  000000                  RAMHLD: .WORD   0               ;RAM ADDR HOLDER 1ST ADDRESS
011022  000000                  RAMR5H: .WORD   0               ;HOLDS R5 FOR LATER
011024     045     116     045  RAMIOP: .ASCIZ  '¥N¥A Rum Address (Octal) = ¥03¥A - ¥03¥N'
011075     045     101     040  RAMPD:  .ASCIZ  '¥A ¥03¥A '
                                        .EVEN
```

```
                                        .SBTTL  CKRAM2  - COMPARE RAM TO I/O CHARACTERISTICS DATA
                                ;+
                                ;
                                ;ROUTINE TO READ THE FIRST 8 OR 10 BYTES FROM RAM
                                ;MEMORY AND COMPARE THIS DATA TO A CHARACTERISTICS DATA BLOCK.
                                ;
                                ;INPUT:
                                ;
                                ;       R4      ADDRESS OF THE CHARACTERISTICS DATA
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - RAM MATCHES PACKET
                                ;               CLR - RAM DOES NOT MATCH PACKET
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       THE TABLE RAMDATA IS FILLED WITH THE
                                ;       DATA HELD IN RAM.
                                ;       RAMSIZ IS SET TO 8. OR 10. FOR PRAMPKT ROUTINE
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;
                                ;-

011110                          CKRAM2::
011110                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
011114  012701  002210                  MOV     #RAMDATA,R1     ;ADDRESS TO SAVE THE RAM DATA
011120  012702  000167                  MOV     #RMCHBEG,R2     ;BYTE ADDRESS OF FIRST RAM DATA
011124  005003                          CLR     R3              ;CLEAR THE ERROR FLAG
011126  004737  017242                  JSR     PC,CHKTSSR      ;WAIT FOR SSR
011132  004737  017242          10$:    JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
011136  110265  177777                  MOVB    R2,TSDBH(R5)    ;SELECT NEXT RAM ADDRESS
011142  004737  017242                  JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
011146  116511  177776                  MOVB    TSBAL(R5),(R1)  ;READ THE RAM DATA
011152  122124                          CMPB    (R1)+,(R4)+     ;COMPARE TO EXPECTED
011154  001401                          BEQ     20$             ;BRANCH IF OK
011156  005203                          INC     R3              ;SET ERROR FLAG
011160  005202          20$:            INC     R2              ;ADDRESS OF NEXT RAM LOCATION
011162  012737  000010  002250          MOV     #8.,RAMSIZ      ;ASSUME NORMAL NOT SET
011170  020227  000176                  CMP     R2,#RMCHEND-2   ;REACHED END YET ?
011174  003756                          BLE     10$             ;BRANCH TILL ALL READ
011176  005703          27$:            TST     R3              ;WAS AN ERROR FOUND ?
011200  001402                          BEQ     30$             ;BRANCH IF NOT
011202  000241                          CLC                     ;CLEAR CARRY TO SHOW ERROR
011204  000401                          BR      50$             ;AND EXIT
011206  000261          30$:            SEC                     ;SHOW GOOD COMPARE
011210  000207          50$:            RTS     PC              ;RETURN
```

```
                                        .SBTTL  CKMSG   - COMPARE WRITE CHAR. MESSAGE BUFFERS
                                ;+
                                ;
                                ;ROUTINE TO COMPARE A WRITE CHARACTERISTICS EXPD AND RECV
                                ;BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
                                ;ERROR PRINT ROUTINES.
                                ;
                                ;INPUT:
                                ;
                                ;       R0      RECV MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       R1      RECV MESSAGE BUFFER LOW ORDER ADDRESS
                                ;       R2      EXPD MESSAGE BUFFER ADDRESS
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - MESSAGE BUFFERS MATCH
                                ;               CLR -MESSAGE BUFFERS DON'T MATCH
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       EXPMSG          BUFFER IS SET TO EXPD DATA
                                ;       RECMSG          BUFFER IS SET TO RECV DATA
                                ;       RCVHIADD        SET TO HIGH ORDER ADDRESS OF RECV
                                ;       RCVLOADD        SET TO LOW ORDER ADDRESS OF RECV
                                ;
                                ;-
011212                          CKMSG::
011212                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011216  010037  002252                  MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011222  010137  002254                  MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011226  005737  003106                  TST     KTENABLE                ;TESTING ABOVE 28K?
011232  001403                          BEQ     10$                     ;BR IF NO
011234  004737  020274                  JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011240  010001                          MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011242  005004                  10$:    CLR     R4                      ;WORD IN BUFFER
011244  005003                          CLR     R3                      ;CLEAR ERROR SEEN FLAG
011246  010205                          MOV     R2,R5                   ;GET EXPD BUFFER ADDRESS
011250  011264  002270          15$:    MOV     (R2),EXPMSG(R4)         ;SAVE EXPD FOR ERROR REPORT
011254  011164  002434                  MOV     (R1),RECMSG(R4)         ;SAVE RECV FOR ERROR REPORT
011260  022221                          CMP     (R2)+,(R1)+             ;EXPD EQUAL RECV?
011262  001401                          BEQ     25$                     ;BR IF YES
011264  005203                          INC     R3                      ;SET ERROR SEEN FLAG
011266  062704  000002          25$:    ADD     #2,R4                   ;POINT TO NEXT WORD ADDRESS
011272  020427  000014                  CMP     R4,#14                  ;DONE FIRST 7 WORDS?
011276  003764                          BLE     15$                     ;BR IF NO
011300  032765  000200  000012          BIT     #X2.EXTF,XST2(R5);IS EXTENDED FEATURES SET IN EXPD?
011306  001403                          BEQ     50$                     ;BR IF NO
011310  020427  000016                  CMP     R4,#16                  ;DONE EXTENDED FEATURES WORD?
011314  003755                          BLE     15$                     ;BR IF NO
011316  005703                  50$:    TST     R3                      ;ANY ERRORS SEEN?
011320  001402                          BEQ     55$                     ;BR IF NO
011322  000241                          CLC                             ;SET FAILURE
011324  000401                          BR      60$                     ;
011326  000261                  55$:    SEC                             ;SET SUCCESS
011330  000207                  60$:    RTS     PC                      ;RETURN
```

```
                                        .SBTTL  CKMSG2  - COMPARE EXPD RECV MESSAGE BUFFERS
                                ;+
                                ;
                                ;ROUTINE TO COMPARE AN EXPECTED AND RECEIVED MESSAGE
                                ;BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
                                ;ERROR PRINT ROUTINES.
                                ;
                                ;INPUT:
                                ;
                                ;       R0      RECV MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       R1      RECV MESSAGE BUFFER LOW ORDER ADDRESS
                                ;       R2      EXPD MESSAGE BUFFER ADDRESS
                                ;       R3      NUMBER OF BYTES TO COMPARE
                                ;
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - MESSAGE BUFFERS MATCH
                                ;               CLR - MESSAGE BUFFERS DON'T MATCH
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       EXPMSG          BUFFER IS SET TO EXPD DATA
                                ;       RECMSG          BUFFER IS SET TO RECV DATA
                                ;       RCVHIADD        SET TO HIGH ORDER ADDRESS OF RECV
                                ;       RCVLOADD        SET TO LOW ORDER ADDRESS OF RECV
                                ;
                                ;-
011332                          CKMSG2::
011332                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011336  020327  000144                  CMP     R3,#RECMSG-EXPMSG;@@D IS COUNT ABOVE MAX ALLOWED?
011342  003412                          BLE     5$                      ;@@D BR IF NO
011344  012703  000144                  MOV     #RECMSG-EXPMSG,R3;@@D
011350                                  PRINTF  #DEBUGMSG               ;@@D
011350  012746  011464                  MOV     #DEBUGMSG,-(SP)
011354  012746  000001                  MOV     #1,-(SP)
011360  010600                          MOV     SP,R0
011362  104417                          TRAP    C$PNTF
011364  062706  000004                  ADD     #4,SP
011370  010037  002252          5$:     MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011374  010137  002254                  MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011400  005737  003106                  TST     KTENABLE                ;TESTING ABOVE 28K?
011404  001403                          BEQ     10$                     ;BR IF NO
011406  004737  020274                  JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011412  010001                          MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011414  005004                  10$:    CLR     R4                      ;WORD IN BUFFER
011416  005005                          CLR     R5                      ;CLEAR ERROR SEEN FLAG
011420  111264  002270          15$:    MOVB    (R2),EXPMSG(R4)         ;SAVE EXPD FOR ERROR REPORT
011424  111164  002434                  MOVB    (R1),RECMSG(R4)         ;SAVE RECV FOR ERROR REPORT
011430  122221                          CMPB    (R2)+,(R1)+             ;EXPD EQUAL RECV?
011432  001401                          BEQ     25$                     ;BR IF YES
011434  005205                          INC     R5                      ;SET ERROR SEEN FLAG
011436  062704  000001          25$:    ADD     #1,R4                   ;POINT TO NEXT BYTE
011442  020403                          CMP     R4,R3                   ;DONE ALL BYTES?
011444  002001                          BGE     50$                     ;BR IF YES
011446  000764                          BR      15$                     ;DO NEXT BYTE
011450  005705                  50$:    TST     R5                      ;ANY ERRORS SEEN?
011452  001402                          BEQ     55$                     ;BR IF NO
```

```
011454  000241                          CLC                     ;SET FAILURE
011456  000401                          BR      60$             ;
011460  000261                  55$:    SEC                     ;SET SUCCESS
011462  000207                  60$:    RTS     PC              ;RETURN

011464     120     122     117  DEBUGMSG:       .ASCIZ  'PROGRAM INTERNAL ERROR -CKMSG2 MESSAGE BUFFER EXCEEDED-';0&D
011554     045     116     045  FERCM:   .ASCII  /%N%A  ***/
011565     040     040     124  ERCM:    .ASCIZ  /  TSSR ERROR CODE REC'D = /
011620     056     056     056  S1MSG:   .ASCIZ  /.... AFTER DOING SOFT INIT/
011653     124     105     123  TINERR:  .ASCIZ  /TEST: .../
                                        .EVEN
```

```
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO FATAL SOFT INIT ERRORS
                                        ;
                                        ;INPUT:
                                        ;
                                        ;       R1      CONTENTS OF TSSR AT ERROR
                                        ;
                                        ;SIDE EFFECTS:
                                        ;
                                        ;       EXECUTES DROP UNIT TO CEASE TESTING
                                        ;
                                        ;-

011666                                          BGNMSG  SFIMSG
011666                                  SFIMSG::
011666  004737  005270                          JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
011672  004737  020160                          JSR     PC,CKDROP       ;DROP UNIT, IF ALLOWED
011676                                          ENDMSG
011676                                  L10003:
011676  104423                                  TRAP    C$MSG

                                        ;+
                                        ;PRINT ROUTINE TO PRINT THE CONTENTS OF
                                        ;TSSR AND A COMMAND PACKET OTHER THAN GET STATUS COMMAND PACKET.
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      TSSR CONTENTS
                                        ;       R4      ADDRESS OF COMMAND PACKET
                                        ;
                                        ;-

011700                                          BGNMSG  PKTSSR
011700                                  PKTSSR::
011700  004737  005270                          JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
011704  012700  000004                          MOV     #4,R0           ;NO. OF WORDS IN PACKET
011710  004737  007066                          JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
011714  013700  002720                          MOV     MESBFA,R0       ;ADDRESS OF MESSAGE BUFFER
011720  005001                                  CLR     R1              ;ASSUME NO HIGH MEMORY
011722  004737  014062                          JSR     PC,PRMESS       ;PRINT THE MESSAGE BUFFER ALSO
011726                                          ENDMSG
011726                                  L10004:
011726  104423                                  TRAP    C$MSG

                                        ;+
                                        ;PRINT ROUTINE TO PRINT THE CONTENTS OF
                                        ;TSSR AND A GET STATUS COMMAND PACKET.
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      TSSR CONTENTS
                                        ;       R4      ADDRESS OF COMMAND PACKET
                                        ;
                                        ;-
```

```
011730                                  BGNMSG  PKTGETS
011730                          PKTGETS::
011730  004737  005270                  JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
011734  012700  000002                  MOV     #2,R0           ;NO. OF WORDS IN GET STATUS PACKET
011740  004737  007066                  JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
011744                                  ENDMSG
011744                          L10005:
011744  104423                          TRAP    C$MSG


                                ;+
                                ;PRINT TSSR ERRORS FOR INITIALIZATION TESTS
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      TSSR CONTENTS
                                ;       R4      ADDRESS OF COMMAND PACKET
                                ;-

011746                                  BGNMSG  SFFMSG
011746                          SFFMSG::
011746  004737  005270                  JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
011752                                  ENDMSG
011752                          L10006:
011752  104423                          TRAP    C$MSG


                                        .SBTTL  PKTMES  - PRINT TSSR AND MESSAGE BUFFER
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT THE CONTENTS OF TSSR AND MESSAGE
                                ;BUFFER FOR ERROR REPORTS
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      CONTENTS OF TSSR
                                ;       R2      LOW ORDER MESSAGE BUFFER
                                ;       R3      HIGH ORDER MESSAGE BUFFER ADDRESS
                                ;       NOTE: R3 IS IGNORED IF KTENABLE FLAG IS CLEAR
                                ;-
                                        BGNMSG  PKTMES
011754                          PKTMES::
011754  004737  005270                  JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR
011760  010200                          MOV     R2,R0           ;LOW ORDER ADDRESS
011762  010301                          MOV     R3,R1           ;HIGH ORDER ADDRESS
011764  004737  014062                  JSR     PC,PRMESS       ;PRINT THE MESSAGE BUFFER
011770                                  ENDMSG
011770                          L10007:
011770  104423                          TRAP    C$MSG
```

```
                                        .SBTTL  ADDSSR  - PRINT TEST ADDRESS AND TSSR
                                ;+
                                ;PRINT ROUTINE TO PRINT THE CONTENTS OF
                                ;TSSR AND A MEMORY TEST ADDRESS
                                ;
                                ;INPUTS:
                                ;
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;       ERRHI   HIGH ORDER MEMORY TEST ADDRESS
                                ;       ERRLO   LOW ORDER MEMORY TEST ADDRESS
                                ;-
                                        BGNMSG  ADDSSR
011772                          ADDSSR::
011772                                  JSR     PC,PRITADD      ;PRINT MEMORY TEST ADDRESS
011772  004737  010022                  MOV     TSSR(R5),R1     ;GET CURRENT TSSR
011776  016501  000000                  JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
012002  004737  005270                  ENDMSG
012006                          L10010:
012006                                  TRAP    C$MSG
012006  104423


                                        .SBTTL  MSGEXP - PRINT WRITE CHAR. EXPD-RECV MESSAGE BUFFERS
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT WRITE CHARACTERISTIC MESSAGE BUFFER
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
                                        BGNMSG  MSGEXP
012010                          MSGEXP::
012010                                  MOV     #7,R0           ;ASSUME NO EXT FEATURES
012010  012700  000007          5$:     JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012014  004737  015426                  ENDMSG
012020                          L10011:
012020                                  TRAP    C$MSG
012020  104423
```

```
                                        .SBTTL  FIFEXP  - PRINT FIFO EXP/RECV DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT FIFO EXP/RECV DATA
                                ;
                                ;       R1      - BYTE COUNT
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY)
                                ;-
                                        BGNMSG  FIFEXP
012022                          FIFEXP::
012022                                  PRINTX  #FIF1MSG,R1     ;PRINT BYTES TRANSFERRED
012022  010146                          MOV     R1,-(SP)
012024  012746  012074                  MOV     #FIF1MSG,-(SP)
012030  012746  000002                  MOV     #2,-(SP)
012034  010600                          MOV     SP,R0
012036  104415                          TRAP    C$PNTX
012040  062706  000006                  ADD     #6,SP
012044                                  PRINTX  #FIF2MSG        ;PRINT HEADER MSG
012044  012746  012143                  MOV     #FIF2MSG,-(SP)
012050  012746  000001                  MOV     #1,-(SP)
012054  010600                          MOV     SP,R0
012056  104415                          TRAP    C$PNTX
012060  062706  000004                  ADD     #4,SP
012064  010100                          MOV     R1,R0           ;GET BYTE COUNT
012066  004737  015776                  JSR     PC,PRBYTEXP     ;PRINT FIFO BYTES IN ERROR
012072                                  ENDMSG
012072                          L10012:
012072  104423                          TRAP    C$MSG
012074     045     116     045  FIF1MSG:        .ASCIZ  '#N#A NUMBER OF BYTES TRANSFERRED = #D2'
012143     045     116     045  FIF2MSG:        .ASCIZ  '#N#A FIFO DATA BYTES IN ERROR:'
                                        .EVEN
```

```
                                                .SBTTL  MSGSTAT - PRINT STATUS HEADER AND MESSAGE BUFFERS
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                        ;
                                        ;
                                        ;IMPLICIT INPUTS:
                                        ;
                                        ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                        ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                        ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                        ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                        ;-
012202                                          BGNMSG  MSGSTAT
012202                                  MSGSTAT::
012202  012701  012244                          MOV     #STATCOD,R1     ;ASCII ADDRESS TABLE
012206  012100                          10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
012210  001410                                  BEQ     20$             ;BR IF YES
012212                                          PRINTX  R0              ;PRINT STATUS BIT NAMES
012212  010046                                  MOV     R0,-(SP)
012214  012746  000001                          MOV     #1,-(SP)
012220  010600                                  MOV     SP,R0
012222  104415                                  TRAP    C$PNTX
012224  062706  000004                          ADD     #4,SP
012230  000766                                  BR      10$             ;DO ANOTHER MSG LINE
012232  012700  000012                  20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
012236  004737  015426                          JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012242                                          ENDMSG
012242                                  L10013:
012242  104423                                  TRAP    C$MSG

012244  012262  012324  012415          STATCOD:        .WORD   1$,2$,3$,4$,5$,6$,0
012262     045     116     045          1$:.ASCIZ  '#N#A Tape Bus Signals in Word #8:'
012324     045     116     045          2$:.ASCIZ  '#N#A        PARERR<15>  IEOT  <12>  IFMK  <9>  IRDY<6>  IRWD<2>'
012415     045     116     045          3$:.ASCIZ  '#N#A        IRESV2<14>  IIDENT<11>  IHER  <8>  IONL<5>  IFBY<1>'
012506     045     116     045          4$:.ASCIZ  '#N#A        IRESV1<13>  ICER  <10>  ISPEED<7>  ILDP<4>  IFPT<0>'
012577     045     116     045          5$:.ASCIZ  '#N#A Tape Bus Signals in Word #9:'
012641     045     116     045          6$:.ASCIZ  '#N#A        DATMIS<7>  ILWD<6>  OUTRDY<5>  INRDY<4>'
                                                .EVEN



                                                .SBTTL  MSGLOOP - PRINT LOOPBACK HEADER AND MESSAGE BUFFERS
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                        ;
                                        ;IMPLICIT INPUTS:
                                        ;
                                        ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                        ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                        ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                        ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                        ;-
012716                                          BGNMSG  MSGLOOP
012716                                  MSGLOOP::
012716  012701  012760                          MOV     #LOOPCOD,R1     ;ASCII ADDRESS TABLE
```

```
012722  012100                  10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
012724  001410                          BEQ     20$             ;BR IF YES
012726                                  PRINTX  R0              ;PRINT STATUS BIT NAMES
012726  010046                          MOV     R0,-(SP)
012730  012746  000001                  MOV     #1,-(SP)
012734  010600                          MOV     SP,R0
012736  104415                          TRAP    C$PNTX
012740  062706  000004                  ADD     #4,SP
012744  000766                          BR      10$             ;DO ANOTHER MSG LINE
012746  012700  000012          20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
012752  004737  015426                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012756                                  ENDMSG
012756                          L10014:
012756  104423                          TRAP    C$MSG

012760  013000  013053  013152  LOOPCOD:        .WORD   1$,2$,3$,4$,5$,6$,7$,0
013000     045     116     045  1$:.ASCIZ  '<N><A Tape Bus Loopback Signals in Word #8:'
013053     045     116     045  2$:.ASCIZ  '<N><A       PARERR<15>          IRESV2<14>          IRESV1<13>'
013152     045     116     045  3$:.ASCIZ  '<N><A IHISP=>IEOT<12>    IWFT=>IIDENT<11>    IREV  =>ICER  <10>'
013251     045     116     045  4$:.ASCIZ  '<N><A IWFM =>IFMK<09>    IFUIT=>IHER <08>    IFAD  =>ISPEED<07>'
013350     045     116     045  5$:.ASCIZ  '<N><A ITADO=>IRDY<06>    ITAD1=>IONL <05>    IERASE=>ILDP  <04>'
013447     045     116     045  6$:.ASCIZ  '<N><A IREW =>IDBY<03>    IRWU =>IRWD <02>    IFEN  =>IFBY  <01>'
013546     045     116     045  7$:.ASCIZ  '<N><A IGO  =>IFPT<00>'
                                        .EVEN
```

```
                                        .SBTTL  MSGSUB - PRINT WRITE SUBSYSTEM MESSAGE BUFFER
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
013574                                  BGNMSG  MSGSUB
013574                          MSGSUB::
013574  012700  000012                  MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
013600  004737  015426                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
013604                                  ENDMSG
013604                          L10015:
013604  104423                          TRAP    C$MSG


                                        .SBTTL  MEMADD - PRINT MEMORY ADDRESS DATA ERROR
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       ERRHI   - MEMORY ERROR HIGH ORDER ADDRESS
                                ;       ERRLO   - MEMORY ERROR LOW ORDER ADDRESS
                                ;       EXP     - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
013606                                  BGNMSG  MEMADD
013606                          MEMADD::
013606  004737  007706                  JSR     PC,PRIADD       ;PRINT MEMORY ADDRESS IN ERROR
013612  013701  002200                  MOV     EXPD,R1         ;GET EXPD DATA
013616  013702  002202                  MOV     RECV,R2         ;GET RECEIVED DATA
013622  004737  007470                  JSR     PC,PRIXOR       ;PRINT EXPD/RECV
013626                                  ENDMSG
013626                          L10016:
013626  104423                          TRAP    C$MSG
```

```
                                        .SBTTL  PRAMPKT - PRINT RAM AND PACKET DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                ;WHEN THE RAM DATA DOES NOT MATCH.
                                ;
                                ;INPUTS:
                                ;
                                ;       R4      POINTER TO COMMAND PACKET
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       RAMDATA         DATA AS READ FROM THE RAM
                                ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       RAMSIZ  SET TO 0
                                ;-

013630                          PRAMPKT:
013630                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
013634  012701  002210                  MOV     #RAMDATA,R1             ;DATA FROM THE RAM
013640  005002                          CLR     R2                      ;INIT BYTE NUMBER
013642  122124                  5$:     CMPB    (R1)+,(R4)+             ;COMPARE EXPECTED, RECEIVED
013644  001000                          BNE     7$                      ;BR IF NO MATCH
013646  116105  177777          7$:     MOVB    -1(R1),R5               ;GET RECV RAM DATA
013652  116403  177777                  MOVB    -1(R4),R3               ;GET EXPD PACKET DATA
013656                                  XOR     R5,R3                   ;XOR EXPD/RECV
013666  042703  177400                  BIC     #177400,R3              ;LOW BYTE ONLY
013672  116137  177777  002202          MOVB    -1(R1),RECV             ;GET RECEIVED RAM DATA
013700  116437  177777  002200          MOVB    -1(R4),EXPD             ;GET EXPECTED RAM DATA
013706                                  PRINTB  #RAMASC,R2,RECV,EXPD,R3
013706  010346                          MOV     R3,-(SP)
013710  013746  002200                  MOV     EXPD,-(SP)
013714  013746  002202                  MOV     RECV,-(SP)
013720  010246                          MOV     R2,-(SP)
013722  012746  013776                  MOV     #RAMASC,-(SP)
013726  012746  000005                  MOV     #5,-(SP)
013732  010600                          MOV     SP,R0
013734  104414                          TRAP    C$PNTB
013736  062706  000014                  ADD     #14,SP
013742  005202                  10$:    INC     R2                      ;UPDATE BYTE COUNT
013744  005737  002250                  TST     RAMSIZ                  ;DEFAULT TO 8.?
013750  001404                          BEQ     15$                     ;BR IF YES
013752  020237  002250                  CMP     R2,RAMSIZ               ;DONE ALL BYTES?
013756  003731                          BLE     5$                      ;BR IF NO
013760  000403                          BR      25$                     ;
013762  020227  000010          15$:    CMP     R2,#8.                  ;DONE DEFAULT NUMBER OF BYTES?
013766  002725                  20$:    BLT     5$                      ;BR IF NO
013770  005037  002250          25$:    CLR     RAMSIZ                  ;SET DEFAULT RAMSIZ
013774  000207                          RTS     PC                      ;RETURN
013776     045     116     045  RAMASC: .ASCIZ   %N%A  BYTE: %D2%A RAM: %03%A Packet: %03%A XOR:%03'
                                        .EVEN
```

```
                                        .SBTTL  PRMESS  - PRINT CONTENTS OF MESSAGE BUFFER
                                ;+
                                ;
                                ;THIS ROUTINE PRINTS THE CONTENTS OF
                                ;THE 7 WORD MESSAGE BUFFER RETURNED BY THE
                                ;TK-25.
                                ;
                                ;INPUT:
                                ;
                                ;       R0      LOW ORDER ADDRESS OF MESSAGE BUFFER
                                ;       R1      HIGH ORDER ADDRESS OF MESSAGE BUFFER
                                ;       NOTE: R1 IS IGNORED IF KTENABLE FLAG IS CLEAR
                                ;
                                ;THIS ROUTINE IS NORMALLY CALLED FROM A PRINT ROUTINE
                                ;
                                ;-

014062                          PRMESS:
014062                                  SAVREG                          ;SAVE THE REGISTERS
014066  010537  011022                  MOV     R5,RAMR5H               ;SAVE DEVICE REGISTER POINTER
014072  010005                          MOV     R0,R5                   ;SAVE LOW ORDER ADDRESS
014074  005737  003106                  TST     KTENABLE                ;ADDRESS ABOVE 28K?
014100  001001                          BNE     10$                     ;BR IF YES
014102  005001                          CLR     R1                      ;SET HIGH ORDER ADDRESS TO 0
014104  010103                  10$:    MOV     R1,R3                   ;SAVE HIGH ORDER ADDRESS
014106  006100                          ROL     R0                      ;SHIFT BIT15 TO C BIT
014110  006101                          ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
014112                                  PRINTX  #PROASC,R1,R5           ;PRINT MESSAGE BUFFER ADDRESS
014112  010546                          MOV     R5,-(SP)
014114  010146                          MOV     R1,-(SP)
014116  012746  014720                  MOV     #PROASC,-(SP)
014122  012746  000003                  MOV     #3,-(SP)
014126  010600                          MOV     SP,R0
014130  104415                          TRAP    C$PNTX
014132  062706  000010                  ADD     #10,SP
014136  022715  177777                  CMP     #177777,(R5)            ;MESSAGE BUFFER FULL OF ONES
014142  001010                          BNE     15$                     ;BR IF BUFFER IS PROBABLY OKAY
014144                                  PRINTX  #MESBFN                 ;"MESSAGE BUFFER PROBABLY NOT VALID"
014144  012746  014640                  MOV     #MESBFN,-(SP)
014150  012746  000001                  MOV     #1,-(SP)
014154  010600                          MOV     SP,R0
014156  104415                          TRAP    C$PNTX
014160  062706  000004                  ADD     #4,SP
014164                          15$:    PRINTX  #PR1ASC                 ;PRINT HEADER FOR CONTENTS
014164  012746  014765                  MOV     #PR1ASC,-(SP)
014170  012746  000001                  MOV     #1,-(SP)
014174  010600                          MOV     SP,R0
014176  104415                          TRAP    C$PNTX
014200  062706  000004                  ADD     #4,SP
014204  005004                          CLR     R4                      ;NUMBER OF THE NEXT WORD
014206  010501                          MOV     R5,R1                   ;COPY LOW ORDER ADDRESS
014210  010300                          MOV     R3,R0                   ;COPY HIGH ORDER ADDRESS
014212  001403                          BEQ     20$                     ;BR IF NOT ABOVE 28K
014214  004737  020274                  JSR     PC,SETMAP               ;SETUP PAR ADDRESS IN R0
014220  010005                          MOV     R0,R5                   ;GET PAR FORMAT ADDRESS ABOVE 28K
014222                          20$:
014222                                  PRINTX  #MESHEA,(R5)+           ;PRINT "MESSAGE BUFFER HEADER ="
```

```
        014222  012546                          MOV     (R5)+,-(SP)
        014224  012746  015023                  MOV     #MESHEA,-(SP)
        014230  012746  000002                  MOV     #2,-(SP)
        014234  010600                          MOV     SP,R0
        014236  104415                          TRAP    C$PNTX
        014240  062706  000006                  ADD     #6,SP
   2570 014244                                  PRINTX  #DATAFL,(R5)+   ;PRINT "DATA FIELD LENGTH     ="
        014244  012546                          MOV     (R5)+,-(SP)
        014246  012746  015070                  MOV     #DATAFL,-(SP)
        014252  012746  000002                  MOV     #2,-(SP)
        014256  010600                          MOV     SP,R0
        014260  104415                          TRAP    C$PNTX
        014262  062706  000006                  ADD     #6,SP
   2571 014266                                  PRINTX  #RBPCRA,(R5)+   ;PRINT "RESIDUAL BYTE COUNTER ="
        014266  012546                          MOV     (R5)+,-(SP)
        014270  012746  015135                  MOV     #RBPCRA,-(SP)
        014274  012746  000002                  MOV     #2,-(SP)
        014300  010600                          MOV     SP,R0
        014302  104415                          TRAP    C$PNTX
        014304  062706  000006                  ADD     #6,SP
   2572 014310                                  PRINTX  #XSOCON,(R5)+   ;PRINT "XST^TO CONTENTS       ="
        014310  012546                          MOV     (R5)+,-(SP)
        014312  012746  015202                  MOV     #XSOCON,-(SP)
        014316  012746  000002                  MOV     #2,-(SP)
        014322  010600                          MOV     SP,R0
        014324  104415                          TRAP    C$PNTX
        014326  062706  000006                  ADD     #6,SP
   2573 014332                                  PRINTX  #XS1CON,(R5)+   ;PRINT "XSTAT1 CONTENTS       ="
        014332  012546                          MOV     (R5)+,-(SP)
        014334  012746  015247                  MOV     #XS1CON,-(SP)
        014340  012746  000002                  MOV     #2,-(SP)
        014344  010600                          MOV     SP,R0
        014346  104415                          TRAP    C$PNTX
        014350  062706  000006                  ADD     #6,SP
   2574 014354                                  PRINTX  #XS2CON,(R5)+   ;PRINT "XSTAT2 CONTENTS       ="
        014354  012546                          MOV     (R5)+,-(SP)
        014356  012746  015314                  MOV     #XS2CON,-(SP)
        014362  012746  000002                  MOV     #2,-(SP)
        014366  010600                          MOV     SP,R0
        014370  104415                          TRAP    C$PNTX
        014372  062706  000006                  ADD     #6,SP
   2575 014376                                  PRINTX  #XS3CON,(R5)+   ;PRINT "XSTAT3 CONTENTS       ="
        014376  012546                          MOV     (R5)+,-(SP)
        014400  012746  015361                  MOV     #XS3CON,-(SP)
        014404  012746  000002                  MOV     #2,-(SP)
        014410  010600                          MOV     SP,R0
        014412  104415                          TRAP    C$PNTX
        014414  062706  000006                  ADD     #6,SP
   2576 014420  022737  000001  002134          CMP     #1,TRANSTST     ;CHECK FOR RAM DUMP REQUIRED
   2577 014426  001402                          BEQ     40$             ;BR, IF REQUIRED
   2578 014430  000137  014540                  JMP     50$             ;JMP IF NO DUMP
   2579 014434                          40$:    PRINTX  #RAMFHR
        014434  012746  014542                  MOV     #RAMFHR,-(SP)
        014440  012746  000001                  MOV     #1,-(SP)
        014444  010600                          MOV     SP,R0
        014446  104415                          TRAP    C$PNTX
        014450  062706  000004                  ADD     #4,SP
```

```
014454  012737  000010  002250          MOV     Ø8.,RAMSIZ      ;RAM FIELD IS 8 BYTES LONG
014462  012737  000020  011020          MOV     Ø20,RAMHLD      ;FIELD STARTS AT 20 OCTAL (10 HEX)
014470  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
014474  012737  000040  011020          MOV     Ø40,RAMHLD      ;FIELD STARTS AT 40 OCTAL (20 HEX)
014502  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
014506  012737  000060  011020          MOV     Ø60,RAMHLD      ;FIELD STARTS AT 60 OCTAL (30 HEX)
014514  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
014520  012737  000020  002250          MOV     Ø16.,RAMSIZ     ;RAM FIELD IS SIXTEEN BYTES LONG
014526  012737  000100  011020          MOV     Ø100,RAMHLD     ;FIELD STARTS AT 100 OCTAL (40 HEX)
014534  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
014540  000207                  50$:    RTS     PC              ;RETURN
014542     045     116     045  RAMFHR: .ASCIZ  '¥N¥A ********** SPECIAL CONTROLLER RAM MEMORY DUMP **********'
014640     045     116     045  MESBFN: .ASCIZ  '¥N¥A MESSAGE BUFFER CONTENTS PROBABLY NOT VALID'
014720     045     116     045  PROASC: .ASCIZ  '¥N¥A Message Buffer Address - ¥01¥05'
014765     045     116     045  PR1ASC: .ASCIZ  '¥N¥A Message Buffer Contents:'

015023     045     116     045  MESHEA: .ASCIZ  '¥N¥A Message Buffer Header      - ¥06'
015070     045     116     045  DATAFL: .ASCIZ  '¥N¥A Data Field Length          - ¥06'
015135     045     116     045  RBPCRA: .ASCIZ  '¥N¥A Residual Byte Counter      - ¥06'
015202     045     116     045  XSOCON: .ASCIZ  '¥N¥A XSTATO Contents            - ¥06'
015247     045     116     045  XS1CON: .ASCIZ  '¥N¥A XSTAT1 Contents            - ¥06'
015314     045     116     045  XS2CON: .ASCIZ  '¥N¥A XSTAT2 Contents            - ¥06'
015361     045     116     045  XS3CON: .ASCIZ  '¥N¥A XSTAT3 Contents            - ¥06'
                                        .EVEN
```

```
                                        .SBTTL  PRMSGEXP - PRINT EXPD/RECV MESSAGE BUFFERS
                                ;+[B
                                ;
                                ;ROUTINE TO PRINT EXPECTED AND RECEIVED MESSAGE BUFFERS
                                ;
                                ;       R0      - NUMBER OF WORDS IN BUFFER
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
015426                          PRMSGEXP::
015426                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
015432  010005                          MOV     R0,R5                   ;SAVE NUMBER OF WORDS
015434  013700  002254                  MOV     RCVLOADD,R0             ;GET RECV LOW ADDRESS
015440  010004                          MOV     R0,R4                   ;COPY LOW ADDRESS
015442  013701  002252                  MOV     RCVHIADD,R1             ;GET RECV HIGH ADDRESS
015446  006100                          ROL     R0                      ;SHIFT BIT15 TO C BIT
015450  006101                          ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
015452                                  PRINTX  #PRMSG0,R1,R4           ;PRINT MESSAGE BUFFER ADDRESS
015452  010446                          MOV     R4,-(SP)
015454  010146                          MOV     R1,-(SP)
015456  012746  015606                  MOV     #PRMSG0,-(SP)
015462  012746  000003                  MOV     #3,-(SP)
015466  010600                          MOV     SP,R0
015470  104415                          TRAP    C$PNTX
015472  062706  000010                  ADD     #10,SP
015476                                  PRINTX  #PRMSG1                 ;PRINT HEADER FOR CONTENTS
015476  012746  015653                  MOV     #PRMSG1,-(SP)
015502  012746  000001                  MOV     #1,-(SP)
015506  010600                          MOV     SP,R0
015510  104415                          TRAP    C$PNTX
015512  062706  000004                  ADD     #4,SP
015516  005004                          CLR     R4                      ;NUMBER OF THE CURRENT WORD
015520  012701  002270                  MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
015524  012702  002434                  MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
015530  011100                  20$:    MOV     (R1),R0                 ;GET EXPD
015532  011203                          MOV     (R2),R3                 ;GET RECV
015534                                  XOR     R0,R3                   ;XOR EXPD/RECV
015544                                  PRINTX  #PRMSG2,R4,(R1)+,(R2)+,R3
015544  010346                          MOV     R3,-(SP)
015546  012246                          MOV     (R2)+,-(SP)
015550  012146                          MOV     (R1)+,-(SP)
015552  010446                          MOV     R4,-(SP)
015554  012746  015711                  MOV     #PRMSG2,-(SP)
015560  012746  000005                  MOV     #5,-(SP)
015564  010600                          MOV     SP,R0
015566  104415                          TRAP    C$PNTX
015570  062706  000014                  ADD     #14,SP
015574  005204                          INC     R4                      ;NUMBER OF THE NEXT
015576  020405                          CMP     R4,R5                   ;DONE ALL YET?
015600  002001                          BGE     50$                     ;BR IF YES
015602  000752                          BR      20$                     ;DO ANOTHER
015604  000207                  50$:    RTS     PC                      ;RETURN
```

```
2641
2642 015606     045     116     045  PRMSG0: .ASCIZ  '%N%A Message Buffer Address - %01%05'
2643 015653     045     116     045  PRMSG1: .ASCIZ  '%N%A Message Buffer Contents:'
2644 015711     045     116     045  PRMSG2: .ASCIZ  '%N%A   WORD 0%D2%A  EXPD: %06%A  RECV: %06%A  XOR: %06'
2645                                         .EVEN
2646
```

```
                                        .SBTTL  PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER
                                ;+
                                ;
                                ;ROUTINE TO PRINT ERROR BYTES IN MESSAGE BUFFERS
                                ;       ONLY THE FIRST 8 ERRORS ENCOUNTERED ARE PRINTED DUE TO SCREEN SPACE
                                ;
                                ;       R0      - NUMBER OF BYTES IN BUFFER
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;-
015776                          PRBYTEXP::
015776                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
016002  010005                          MOV     R0,R5                   ;SAVE NUMBER OF BYTES
016004  005037  002266                  CLR     PRMNO                   ;INIT ERROR COUNT
016010  005004                          CLR     R4                      ;NUMBER OF THE CURRENT BYTE
016012  012701  002270                  MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
016016  012702  002434                  MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
016022  111100                  20$:    MOVB    (R1),R0                 ;GET EXPD BYTE
016024  042700  177400                  BIC     #^C<377>,R0             ;CLEAR UPPER BYTE
016030  110037  016344                  MOVB    R0,PRBEXP               ;SAVE FOR ERROR REPORT
016034  111203                          MOVB    (R2),R3                 ;GET RECV BYTE
016036  042703  177400                  BIC     #^C<377>,R3             ;CLEAR UPPER BYTE
016042  110337  016346                  MOVB    R3,PRBREC               ;FOR ERROR REPORT
016046                                  XOR     R0,R3                   ;XOR EXPD/RECV
016056  122122                          CMPB    (R1)+,(R2)+             ;EXPD = RECV?
016060  001431                          BEQ     30$                     ;BR IF YES
016062  005237  002266                  INC     PRMNO                   ;UPDATE ERROR COUNT
016066  023727  002266  000010          CMP     PRMNO,#8.               ;PRINTED 8?
016074  101023                          BHI     30$                     ;BR IF YES
016076                          27$:    PRINTX  #PRBMSG,R4,PRBEXP,PRBREC,R3
016076  010346                          MOV     R3,-(SP)
016100  013746  016346                  MOV     PRBREC,-(SP)
016104  013746  016344                  MOV     PRBEXP,-(SP)
016110  010446                          MOV     R4,-(SP)
016112  012746  016212                  MOV     #PRBMSG,-(SP)
016116  012746  000005                  MOV     #5,-(SP)
016122  010600                          MOV     SP,R0
016124  104415                          TRAP    C$PNTX
016126  062706  000014                  ADD     #14,SP
016132                                  FORCEXIT        50$             ;BUG
016142  000404                          BR      35$                     ;BUG
016144                          30$:
016144                                  FORCERROR  27$,NOTSSR           ;BUG
016154                          35$:                                    ;BUG
016154  005204                          INC     R4                      ;NUMBER OF THE NEXT
016156  020405                          CMP     R4,R5                   ;DONE ALL YET?
016160  002001                          BGE     50$                     ;BR IF YES
016162  000717                          BR      20$                     ;DO ANOTHER
016164                          50$:    PRINTX  #PRBTOT,PRMNO           ;PRINT TOTAL ERROR COUNT
016164  013746  002266                  MOV     PRMNO,-(SP)
016170  012746  016277                  MOV     #PRBTOT,-(SP)
016174  012746  000002                  MOV     #2,-(SP)
016200  010600                          MOV     SP,R0
016202  104415                          TRAP    C$PNTX
```

M6


```
      016204  062706  000006                    ADD     Ø6,SP
 2691 016210  000207                            RTS     PC              ;RETURN
 2692
 2693 016212     045     116     045  PRBMSG: .ASCIZ  '%N%A   BYTE Ø%D2%A  EXPD: %03%A  RECV: %03%A  XOR: %03'
 2694 016277     045     116     045  PRBTOT: .ASCIZ  '%N%A NUMBER OF BYTES IN ERROR = %D2'
 2695                                         .EVEN
 2696 016344  000000                  PRLEXP: .WORD   0               ;EXPD
 2697 016346  000000                  PRBREC: .WORD   0               ;RECV
 2698
```

```
                                        .SBTTL  EXPREC  - PRINT EXPD/RECV WORD DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
                                ;
                                ;-

016350                                  BGNMSG  EXPREC
016350                          EXPREC::
016350  004737  007470                  JSR     PC,PRIXOR       ;PRINT THE DATA
016354                                  ENDMSG
016354                          L10017:
016354  104423                          TRAP    C$MSG
```

```
                                        .SBTTL  EXPBREC - PRINT EXPD/RECV BYTE DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY BYTE EXPD/RECV DATA
                                ;
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA BYTE
                                ;       R2      EXPECTED DATA BYTE
                                ;
                                ;-

016356                                  BGNMSG  EXPBREC
016356                          EXPBREC::
016356  004737  007340                  JSR     PC,PRIBXOR      ;PRINT THE DATA
016362                                  ENDMSG
016362                          L10020:
016362  104423                          TRAP    C$MSG


                                        .SBTTL  RAMERR  - PRINT RAM AND PACKET DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                ;
                                ;INPUTS:
                                ;
                                ;       R4      POINTER TO COMMAND PACKET
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       RAMDATA         DATA AS READ FROM THE RAM
                                ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       RAMSIZ  SET TO 0
                                ;-

016364                                  BGNMSG  RAMERR
016364                          RAMERR::
016364  004737  013630                  JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
016370                                  ENDMSG
016370                          L10021:
016370  104423                          TRAP    C$MSG


                                        .SBTTL  RAMTADD - PRINT TEST ADDRESS, RAM AND PACKET DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                ;
                                ;INPUTS:
```

```
                                        ;
                                        ;       R4      POINTER TO COMMAND PACKET
                                        ;
                                        ;IMPLICIT INPUTS:
                                        ;
                                        ;       RAMDATA         DATA AS READ FROM THE RAM
                                        ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                        ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                        ;       ERRHI           HIGH ORDER TEST ADDRESS
                                        ;       ERRLO           LOW ORDER TEST ADDRESS
                                        ;
                                        ;IMPLICIT OUTPUTS:
                                        ;
                                        ;       RAMSIZ  SET TO 0
                                        ;-

016372                                          BGNMSG  RAMTADD
016372                                  RAMTADD::
016372  004737  010022                          JSR     PC,PRITADD      ;PRINT TEST ADDRESS
016376  004737  013630                          JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
016402                                          ENDMSG
016402                                  L10022:
016402  104423                                  TRAP    C$MSG


                                                .SBTTL  RAMEXP  - PRINT RAM EXPD/RECV DATA
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      RECEIVED DATA
                                        ;       R2      EXPECTED DATA
                                        ;       R4      CONTROLLER RAM ADDRESS
                                        ;-

016404                                          BGNMSG  RAMEXP
016404                                  RAMEXP::
016404  042701  177400                          BIC     #^C<377>,R1     ;SAVE EXPD RAM DATA BYTE
016410  042702  177400                          BIC     #^C<377>,R2     ;SAVE EXPD RAM DATA BYTE
016414  004737  007614                          JSR     PC,PRIRAM       ;PRINT THE RAM ADDRESS
016420  004737  007470                          JSR     PC,PRIXOR       ;PRINT THE DATA
016424                                          ENDMSG
016424                                  L10023:
016424  104423                                  TRAP    C$MSG


                                                .SBTTL  TIMEXP  - PRINT TIMER A,B AND EXP/REC
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                        ;AND TIMER A,B HEADER MESSAGE
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      RECEIVED DATA
                                        ;       R2      EXPECTED DATA
```

```
                                        ;-

016426                                          BGNMSG  TIMEXP
016426                                  TIMEXP::
016426                                          PRINTX  #TIMSGO         ;PRINT HEADER
016426  012746  016454                          MOV     #TIMSGO,-(SP)
016432  012746  000001                          MOV     #1,-(SP)
016436  010600                                  MOV     SP,R0
016440  104415                                  TRAP    C$PNTX
016442  062706  000004                          ADD     #4,SP
016446  004737  007470                          JSR     PC,PRIXOR       ;PRINT THE DATA
016452                                          ENDMSG
016452                                  L10024:
016452  104423                                  TRAP    C$MSG


016454     045     116     045          TIMSGO: .ASCIZ  '%N%A TIMER A STATUS IS IN BIT 3%N%A TIMER B STATUS IS IN BIT 2'
                                        .EVEN
```

```
                                        .SBTTL  BADSSR - PRINT TSSR ERRORS ON DATA TRANSFERS

                                ;+
                                ;
                                ;PRINT ROUTINE FOR TSSR ERRORS ON DATA TRANSFERS
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      CONTENTS OF TSSR
                                ;       R2      DATA WRITTEN (8 BITS)
                                ;
                                ;-

016554                                  BGNMSG  BADSSR
016554                          BADSSR::
016554  010246                          MOV     R2,-(SP)        ;SAVE DATA TRANSFERRED
016556  042702  177400                  BIC     #177400,R2      ;GET JUST ONE BYTE
016562                                  PRINTB  #XFERASC,R2
016562  010246                          MOV     R2,-(SP)
016564  012746  016614                  MOV     #XFERASC,-(SP)
016570  012746  000002                  MOV     #2,-(SP)
016574  010600                          MOV     SP,R0
016576  104414                          TRAP    C$PNTB
016600  062706  000006                  ADD     #6,SP
016604  012602                          MOV     (SP)+,R2        ;RESTORE R2
016606  004737  005270                  JSR     PC,PRITSSR      ;DECODE TSSR CONTENTS
016612                                  ENDMSG
016612                          L10025:
016612  104423                          TRAP    C$MSG
016614     045     116     045  XFERASC:        .ASCIZ  '%N%A Data Transferred = %03'
```

```
                                        .SBTTL  GLOBAL SUBROUTINES SECTION

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

                                        .SBTTL  SOFINIT - SOFT INITIALIZE OF CONTROLLER

                                ;+
                                ;
                                ;ROUTINE TO DO A SOFT INITIALIZE OF THE CONTROLLER
                                ;BY WRITING INTO THE TSSR REGISTER. AFTER THE INIT,
                                ;THE TSSR REGISTER IS TESTED FOR ERRORS. ANY ERRORS
                                ;DETECTED SHOULD BE TREATED AS DEVICE FATAL ERRORS.
                                ;
                                ;INPUTS:
                                ;
                                ;       R5      ADDRESS OF FIRST REGISTER
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      CONTENTS OF TSSR, IF ERROR
                                ;       CARRY   SET IF INIT WAS OKAY
                                ;               CLEAR IF FATAL ERROR
                                ;
                                ;CALLING SEQUENCE:
                                ;
                                ;       MOV     #ADDRESS,R5
                                ;       JSR     PC,SOFINIT
                                ;       BCS     CONTINUE
                                ;       ERRDF                   ;REPORT FATAL ERROR
                                ;
                                ;-

016650                          SOFINIT::
016650                                  SAVREG                  ; SAVE THE REGISTERS
016654  012765  000000  000000          MOV     #0,TSSR(R5)     ; DO THE INIT.
016662  004737  017124                  JSR     PC,WAITF        ; WAIT FOR SSR
016666  016500  000000                  MOV     TSSR(R5),R0     ;GET THE TSSR REGISTER
016672  010004                          MOV     R0,R4           ;START SETUP OF EXPECTED TSSR
016674  042704  176277                  BIC     #^C<HIADDR!OFL>,R4 ;CLEAR OUT UNUSED BITS
016700  052704  002200                  BIS     #SSR!NBA,R4     ;R4 HAS EXPECTED CONTENTS
016704  020400                          CMP     R4,R0           ;ONLY EXPECTED BITS SET ?
016706  001402                          BEQ     5$              ;BRANCH IF OKAY
016710  000241                          CLC                     ;CLEAR THE CARRY FOR ERROR
016712  000401                          BR      10$             ;GO TO EXIT
016714  000261                  5$:     SEC                     ;SET THE CARRY BIT
016716  000207                  10$:    RTS     PC              ;RETURN TO CALLER
```

```
                                        .SBTTL  CHKAMB  - CHECK TSSR FOR AMBIGUITY

                                ;+
                                ;
                                ;THIS ROUTINE TESTS THE CONTENTS OF THE TSSR REGISTER
                                ;FOR AMBIGUITY
                                ;
                                ;INPUT:
                                ;
                                ;       R0      CONTENTS OF TSSR
                                ;
                                ;OUTPUT:
                                ;
                                ;       R0      CONTENTS OF TSSR
                                ;
                                ;       CARRY   SET - NO AMBIGUITY
                                ;               CLR - AMBIGUOUS CONTENTS
                                ;
                                ;-

016720                          CHKAMB:
016720                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
016724  010004                          MOV     R0,R4           ;CONTENTS OF TSSR
016726  032700  100000                  BIT     #SC,R0          ;IS BIT 15 SET ?
016732  001004                          BNE     5$              ;BRANCH IF YES
016734  032700  174077                  BIT     #^C<NBA!OFL!SSR!HIADDR>,R0      ;ANY OTHER BITS SET ?
016740  001023                          BNE     40$             ;MUST BE AN ERROR
016742  000424                          BR      45$             ;RETURN WITH SUCCESS
016744  032700  000200          5$:     BIT     #SSR,R0         ;IS READY BIT SET ?
016750  001011                          BNE     10$             ;BRANCH IF READY BIT IS SET.
016752  032700  000040                  BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016756  001414                          BEQ     40$             ;ERROR IF NOT
016760  042704  177761                  BIC     #^CTERCLS,R4    ;CLEAR ALL BUT TERMINATION CODE
016764  020427  000016                  CMP     R4,#16          ;ALL THREE BITS MUST BE SET
016770  001007                          BNE     40$             ;ERROR IF NOT SET
016772  000410                          BR      45$             ;OK IF ALL ARE SET
016774  032700  000040          10$:    BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
017000  001405                          BEQ     45$             ;ERROR IF BIT IS SET WITH SSR
017002  032700  000006                  BIT     #BIT2!BIT1,R0   ;IS THIS A FUNCTION REJECT
017006  001002                          BNE     45$             ;BR, IF TSSR IS OK
017010  000241                  40$:    CLC                     ;AMBIGUOUS CONTENTS
017012  000401                          BR      50$
017014  000261                  45$:    SEC                     ;SHOW SUCCESS - NO AMBIGUITY
017016  000207                  50$:    RTS     PC              ;RETURN TO CALLER
```

```
                                        .SBTTL  ENAINT,DSBINT - ENABLE/DISABLE INTERRUPTS
                                ;
                                ; DEFAULT DISPLAY INTERRUPT HANDLERS.
                                ; IF DISPLAY TIME-OUT, REPORT DEV FATAL, AND ABORT PASS.
                                ; OTHERWISE, SAVE DPU REGISTERS AND DISMISS.
                                ;

                                ; BIT DEFINITIONS FOR "INTMASK" AND "INTFLAG" BYTES:
                                ;
        000200                          IOKCKIN=BIT7            ; DON'T CHECK FOR BAD INTERRUPTS -- TEST WILL.
        000001                          IOKSTP=BIT0             ; EXPECT "STOP" INTERRUPT.
                                ;
                                ;INTERRUPT MASK -- SAYS EXPECTING INTERRUPTS
017020     000                  INTMASK:        .BYTE   0
                                ;INTERRUPT FLAG -- SAYS WE GOT ONE (IF POSITIVE)
017021     000                  INTFLAG:        .BYTE   0

                                ;SAVED INTERRUPT VECTOR:
017022  000000                  INTVEC: .WORD   0
                                ;SAVE CPU PC
017024  000000                  INTCPC: .WORD   0

                                ;SUBROUTINE TO ENABLE INTERRUPTS:
017026  010046                  ENAINT: MOV     R0,-(SP)        ;SAVE R0
017030  013700  002160                  MOV     IVEC,R0         ;GET POINTER TO VECTORS
017034  012720  017072                  MOV     #INTR,(R0)+     ;SET UP INTERRUPT VECTOR
017040  012720  000340                  MOV     #PRI07,(R0)+
017044  012600                          MOV     (SP)+,R0        ;RESTORE R0
017046  011646                          MOV     (SP),-(SP)
017050  012766  000000  000002          MOV     #0,2(SP)        ;SET CPU TO LEVEL 0
017056  000002                          RTI

                                ;SUBROUTINE TO DISABLE INTERRUPTS (RAISE PRIORITY TO LEVEL 7)
017060  011646                  DSBINT: MOV     (SP),-(SP)
017062  012766  000340  000002          MOV     #PRI07,2(SP)
017070  000002                          RTI
```

```
                                        .SBTTL  INTR    - INTERRUPT HANDLERS

017072                                  BGNSRV  INTR            ;DEFINE INTERRUPT ENTRY
017072                          INTR::
017072  012737  000001  002174          MOV     #1,INTRECV      ;SET FLAG TO SHOW INTERRUPT RECEIVED
017100  105037  017021                  CLRB    INTFLAG         ;CLEAR FLAG TO SAY WE GOT INTERRUPT
017104  132737  000001  017020          BITB    #IOKSTP,INTMASK ;EXPECTING STOP INTERRUPT?
017112  001003                          BNE     1$              ;BR IF YES
017114  152737  000001  017021          BISB    #IOKSTP,INTFLAG ;NO. SET THE ERROR FLAG.

                                ;SAVE REGISTERS, MSG BUFFER, ETC.
017122                          1$:
017122                                  ENDSRV
017122                          L10026:
017122  000002                          RTI
```

```
                                        .SBTTL  WAITF   - WAIT FOR SUBSYSTEM READY
                                ;
                                ; SUBROUTINE TO WAIT FOR THE SUBSYSTEM READY FLAG
                                ;
                                ;INPUTS:
                                ;
                                ;       R5      ADDRESS OF FIRST DEVICE REGISTER
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      CONTENTS OF LAST TSSR READ
                                ;       CARRY   SET - READY BIT SET
                                ;               CLR - TIMEOUT WAITING FOR READY
                                ;
017124                          WAITF:: BREAK                   ; DO A SUPVSR BREAK FIRST.
017124  104422                          TRAP    C$BRK
017126  012746  177776                  MOV     #177776,-(SP)   ;BIG MSEC TIMER
017132                                  DELAY   1               ;DELAY 100US
017132  012727  000001                  MOV     #1,(PC)+
017136  000000                          .WORD   0
017140  013727  002116                  MOV     L$DLY,(PC)+
017144  000000                          .WORD   0
017146  005367  177772                  DEC     -6(PC)
017152  001375                          BNE     .-4
017154  005367  177756                  DEC     -22(PC)
017160  001367                          BNE     .-20
017162  016500  000000          2$:     MOV     TSSR(R5),R0     ;READ THE TSSR REGISTER
017166  105700                          TSTB    R0              ;TEST FOR READY BIT SET

017170  100421                          BMI     3$              ; EXIT ON STOP FLAG.
017172                                  DELAY   1               ; WAIT 100 USEC
017172  012727  000001                  MOV     #1,(PC)+
017176  000000                          .WORD   0
017200  013727  002116                  MOV     L$DLY,(PC)+
017204  000000                          .WORD   0
017206  005367  177772                  DEC     -6(PC)
017212  001375                          BNE     .-4
017214  005367  177756                  DEC     -22(PC)
017220  001367                          BNE     .-20
017222                                  BREAK                   ; DO A SUPVSR BREAK FIRST.
017222  104422                          TRAP    C$BRK
017224  005316                          DEC     (SP)            ;REDUCE DELAY COUNT
017226  001355                          BNE     2$              ;RETRY UNTIL TIMER EXPIRES
017230  000241                          CLC                     ; C = 0, CONTROLLER STILL RUNNING...
017232  000401                          BR      4$              ;...OR HUNG-UP AFTER 300 MSEC.
017234  000261                  3$:     SEC                     ; C = 1, CONTROLLER IS STOPPED.
017236  005326                  4$:     DEC     (SP)+           ;RESTORE STACK WITHOUT CHANGING CARRY BIT
017240  000207                          RTS     PC
```

```
                                        .SBTTL  CHKTSSR - CHECK TSSR FOR READY

                                ;+
                                ;
                                ;THIS ROUTINE WAITS FOR READY IN THE TSSR
                                ;AND TESTS FOR AMBIGUOUS BIT SETTINGS IN TSSR.
                                ;
                                ;INPUT:
                                ;
                                ;       R5      ADDRESS OF CSR REGISTERS
                                ;
                                ;OUTPUT:
                                ;
                                ;       R0      CONTENTS OF TSSR
                                ;       CARRY   SET - OKAY
                                ;               CLR - NOT READY AMBIGUOUS, OR SC SET
                                ;
                                ;-

017242                          CHKTSSR:
017242  004737  017124                  JSR     PC,WAITF        ;WAIT FOR READY
017246  103014                          BCC     20$             ;BRANCH IF TIME OUT
017250  004737  016720                  JSR     PC,CHKAMB       ;TSSR AMBIGOUS?
017254  103006                          BCC     10$             ;BR IF YES
017256  032700  100000                  BIT     #SC,R0          ;SPECIAL CONDITION SET?
017262  001405                          BEQ     15$             ;BR IF NO
017264  032700  074000                  BIT     #<SCE!BIE!RMR!NXM>,R0   ;ANY ERROR BITS SET?
017270  001402                          BEQ     15$             ;BR IF NO
017272  000241                  10$:    CLC                     ;SET FAILURE
017274  000401                          BR      20$             ;
017276  000261                  15$:    SEC                     ;SET SUCCESS
017300  000207                  20$:    RTS     PC              ;RETURN TO CALLER
```

```
                                        .SBTTL  XNXM    - CHECK FOR NONEXISTENT MEMORY
                                ;+
                                ; ROUTINE TO TEST FOR A NEXM IN THE RANGE (R1) THRU (R2).
                                ; ON RETURN, IF "C" = 1, (R1) = NEXM ADDRESS.
                                ;               "C" = 0, ALL ADDRESSES OK.
                                ;
                                ;CALL:  MOV ADR1,R1
                                ;       MOV ADR2,R2
                                ;       JSR PC,NXM
                                ;       RETURN                          ;TEST "C" AND PROCEED.
                                ;
017302  012737  017334  000004  XNXM:   MOV     #2$,@#4                 ; SET BUSERR VECTOR.
017310  012737  000200  000006          MOV     #PRI04,@#6
017316  005003                          CLR     R3                      ;FLAG.
017320  005711                  1$:     TST     (R1)                    ;TEST THE ADDRESS(ES).
                                                                        ;IF ANY TRAP, CONTINUE AT 2$.
017322  020102                          CMP     R1,R2                   ;OTHERWISE, CONTINUE HERE.
017324  001407                          BEQ     3$                      ;BR IF FINISHED (NO NEXM'S).
017326  062701  000002                  ADD     #2,R1                   ;SET NEXT ADDRESS...
017332  000772                          BR      1$                      ;...AND CONTINUE.

017334  005103                  2$:     COM     R3                      ;GOT ONE, SET FLAG...
017336  012716  017344                  MOV     #3$,(SP)
017342  000002                          RTI                             ;...AND DISMISS INTERRUPT...
017344                          3$:     CLRVEC  #4                      ;...AND GIVE BACK THE VECTOR.
017344  012700  000004                  MOV     #4,R0
017350  104436                          TRAP    C$CVEC
017352  005703                          TST     R3                      ;DID WE CATCH ONE ??
017354  001401                          BEQ     .+4                     ;NO, "C" = 0, SKIP NEXT.
017356  000261                          SEC                             ;YES, "C" = 1, (R1) = NEXM ADDR.
017360  000207                          RTS     PC



                                        .SBTTL  TSTLOOP - CHECK ITERATION COUNT
                                ;+
                                ; SUBROUTINE TO EXECUTE TEST ITERATIONS.
                                ; EXIT WITH "C" SET IF LOOPS ALLOWED AND LOOP COUNT NON-ZERO.
                                ; LOOP COUNTER IS SET BY "BEGIN.TEST" MACRO.
                                ;
                                ; CALL: LOOPTO  ARG
                                ;
017362                          TSTLOOP::
017362  005737  002136                  TST     NOITS                   ; ITERATIONS INHIBITED?
017366  001006                          BNE     1$                      ; YES.
017370  005737  002154                  TST     QVP                     ; NO.
017374  100403                          BMI     1$                      ;LOOPS DISALLOWED IN QUICK PASS.
017376  005337  002166                  DEC     LOOPCNT                 ; BUMP LOOP COUNTER.
017402  001002                          BNE     2$
017404  000241                  1$:     CLC                             ;LOOP DISALLOWED, OR DONE.
017406  000401                          BR      3$
017410  000261                  2$:     SEC                             ;LOOP ENABLED.
017412  000207                  3$:     RTS     PC
```

```
                                        .SBTTL  TSTSETUP - PRINT TEST NAME AND INIT ERROR COUNTS
                                ;+
                                ; PRINT THE NUMBER AND NAME OF EACH TEST AS WE GO ALONG.
                                ; INCREMENT "TESTK" TO INDICATE THE NUMBER OF TESTS
                                ; IN THE CURRENT RUN SEQUENCE.
                                ; CLEAR THE ERROR COUNTER AND SIGNATURE EXTENSION FLAGS.
                                ;
                                ;INPUT:
                                ;
                                ;       R0      POINTER TO TEST ID ASCIZ STRING
                                ;
                                ;OUTPUT:
                                ;
                                ;       R5      ADDRESS OF FIRST DEVICE REGISTER
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       TSTCNT  UPDATED TO COUNT TESTS PERFORMED SINCE START OR RESTART
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;       INTERRUPT LEVEL IS RASIED TO LEVEL OF
                                ;       THE DEVICE UNDER TEST
                                ;
                                ;-

017414                          TSTSETUP::
017414  010046                          MOV     R0,-(SP)        ;SAVE THE TEST ID MESSAGE
017416  005037  003112                  CLR     SIFLAG          ; CLEAR "SOFT INIT" FLAG
017422  005037  017662                  CLR     ERRK            ; CLEAR LOCAL ERROR COUNTER.
017426  005037  005236                  CLR     EXTA            ; CLEAR ERROR EXTENSION FLAG.
017432  105037  017020                  CLRB    INTMASK         ; CLEAR INTERRUPT MASK (CHECK ERROR)
017436  013700  002152                  MOV     UNITN,R0        ; GET THE UNIT NUMBER,
017442  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
017444  005737  003066                  TST     NODEV           ; DID STARTUP FIND THE DEVICE?
017450  001430                          BEQ     4$              ; BR IF YES
017452  100010                          BPL     3$              ; BR IF NOT IDLE
017454  052760  160000  003134          BIS     #160000,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
017462                                  ERRDF   1,NXR,NXRERR    ; NO DEVICE HERE -- PRINT IT
017462  104455                          TRAP    C$ERDF
017464  000001                          .WORD   1
017466  003642                          .WORD   NXR
017470  005202                          .WORD   NXRERR
017472  000407                          BR      2$
017474  052760  160001  003134  3$:     BIS     #160001,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
017502                                  ERRDF   2,NOINIT        ; DEVICE NOT IDLE
017502  104455                          TRAP    C$ERDF
017504  000002                          .WORD   2
017506  004237                          .WORD   NOINIT
017510  000000                          .WORD   0
017512  012737  177777  003064  2$:     MOV     #-1,DUFLG       ; DROP THE UNIT
017520                                  DODU    UNITN
017520  013700  002152                  MOV     UNITN,R0
017524  104451                          TRAP    C$DODU
017526                                  DOCLN                   ; ABORT THE PASS
```

```
     017526  104444                          TRAP    C$DCLN
3167 017530  000423                          BR      5$
3168
3169 017532                          4$:     RFLAGS  R0              ; GET THE OPERATOR FLAGS.
     017532  104421                          TRAP    C$RFLA
3170 017534  032700  001000                  BIT     #PNT,R0         ; PRINT THE TEST NUMBERS?
3171 017540  001412                          BEQ     1$              ; BR IF NO
3172 017542  011600                          MOV     (SP),R0         ;GET THE ID MESSAGE
3173 017544                                  PRINTF  #TNAM,R0        ;DISPLAY THE TEST ID
     017544  010046                          MOV     R0,-(SP)
     017546  012746  017610                  MOV     #TNAM,-(SP)
     017552  012746  000002                  MOV     #2,-(SP)
     017556  010600                          MOV     SP,R0
     017560  104417                          TRAP    C$PNTF
     017562  062706  000006                  ADD     #6,SP
3174 017566  005237  002164          1$:     INC     TSTCNT          ; BUMP TEST COUNTER.
3175 017572                                  SETPRI  IPRI            ;PRIORITY THAT OF DEVICE
     017572  013700  002162                  MOV     IPRI,R0
     017576  104441                          TRAP    C$SPRI
3176 017600  005726                  5$:     TST     (SP)+           ;FIX UP THE STACK
3177 017602  013705  002156                  MOV     CSRADDR,R5      ; ADDRESS OF TSV REGISTERS ON UNIBUS
3178 017606  000207                          RTS     PC
3179 017610     045     123     045  TNAM:   .ASCIZ  '%S%T%A Test'
3180                                         .EVEN
```

```
                                        .SBTTL  TSTEND  - PRINT ERRORS RECEIVED
                                ;
                                ; AT END OF EACH TEST, PRINT THE NUMBER OF ERRORS RECEIVED
                                ; IF NORMAL ERROR REPORTING IS DISABLED (FLA;IER).
                                ;
017624                          TSTEND: RFLAGS  R0
017624  104421                          TRAP    C$RFLA
017626  030027  020000                  BIT     R0,#IER
017632  001412                          BEQ     1$              ; BR IF "IER" NOT SET.
017634                                  PRINTF  #ESUM,ERRK      ; PRINT ERROR COUNT.
017634  013746  017662                  MOV     ERRK,-(SP)
017640  012746  017664                  MOV     #ESUM,-(SP)
017644  012746  000002                  MOV     #2,-(SP)
017650  010600                          MOV     SP,R0
017652  104417                          TRAP    C$PNTF
017654  062706  000006                  ADD     #6,SP
017660  000207                  1$:     RTS     PC

017662  000000                  ERRK:   0                       ; LOCAL ERROR COUNT.
017664     045     101     040  ESUM:   .ASCIZ  /#A #D#A ERRORS/
017703     105     122     122  EMAXDU: .ASCIZ  /ERROR LIMIT REACHED -- DROPPING UNIT/
                                        .EVEN

                                        .SBTTL  INCERK  - INCREMENT LOCAL ERROR COUNT
                                ;+
                                ; ROUTINES TO INCREMENT LOCAL ERROR COUNT AND CHECK FOR LIMIT:
                                ;-
017750  005237  017662          INCERK: INC     ERRK            ; INCREMENT LOCAL ERROR COUNT
017754  010046                          MOV     R0,-(SP)        ; SAVE R0
017756  013700  002152                  MOV     UNITN,R0        ; GET UNIT NUMBER.
017762  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
017764  062700  003134                  ADD     #ERTABL,R0      ; R0 GETS ADDRESS OF ERROR TABLE ENTRY.
017770  005210                          INC     (R0)            ; INCREMENT THE DEVICE ERROR COUNT
017772  032710  007777                  BIT     #7777,(R0)      ; DID WE OVERFLOW THE FIELD?
017776  001001                          BNE     1$              ; BR IF NO.
020000  005310                          DEC     (R0)            ; YES -- BACK IT UP TO 7777.
020002  012600                  1$:     MOV     (SP)+,R0        ; RESTORE R0
020004  000207                          RTS     PC              ; RETURN TO CALLER.

020006  010046                  CKEMAX: MOV     R0,-(SP)        ; SAVE R0
020010  013700  002152                  MOV     UNITN,R0        ; GET UNIT NUMBER
020014  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET
020016  016000  003134                  MOV     ERTABL(R0),R0   ; GET ERROR TABLE ENTRY
020022  042700  170000                  BIC     #170000,R0      ; EXTRACT ERROR COUNT FIELD
020026  020037  002144                  CMP     R0,GERRMAX      ; IS GLOBAL LIMIT EXCEEDED FOR THIS UNIT?
020032  103004                          BHIS    1$              ; BR IF YES
020034  023737  017662  002142          CMP     ERRK,LERRMAX    ; IS LOCAL LIMIT EXCEEDED FOR THIS TEST?
020042  103417                          BLO     2$              ; BR IF NO
020044                          1$:     RFLAGS  R0              ; GET OPERATOR FLAGS
020044  104421                          TRAP    C$RFLA
020046  032700  000040                  BIT     #IDU,R0         ; IS DROPPING INHIBITED?
020052  001013                          BNE     2$              ; BR IF YES.
020054  012737  177777  003064          MOV     #-1,DUFLG       ; NO -- DROP THE UNIT
020062                                  ERRDF   4,EMAXDU
020062  104455                          TRAP    C$ERDF
020064  000004                          .WORD   4
020066  017703                          .WORD   EMAXDU
```

```
     020070  000000                          .WORD   0
3228 020072                                  DODU    UNITN
     020072  013700  002152                  MOV     UNITN,R0
     020076  104451                          TRAP    C$DODU
3229 020100                                  DOCLN
     020100  104444                          TRAP    C$DCLN
3230 020102  012600                  2$:     MOV     (SP)+,R0        ; RESTORE R0
3231 020104  000207                          RTS     PC              ; RETURN TO CALLER
3232                                         .SBTTL  FATCHK - INC FATAL ERRORS AND CHECK FOR LIMIT
3233                                 ;+
3234                                 ;
3235                                 ;       CHECK FATAL COUNTER, AFTER INC, FOR MORE THAN 25
3236                                 ;       ERRORS AND IF OVER CALL UNIT DROP ROUTINE
3237                                 ;
3238                                 ;-
3239 020106                          FATCHK:
3240 020106                                  SAVREG                  ;BETTER SAVE THE REGISTERS
3241 020112  013701  002152                  MOV     UNITN,R1        ;PICK UP THE UNIT NUMBER
3242 020116  006301                          ASL     R1              ;MAKE IT INTO A BYTE OFFSET
3243 020120  062761  000001  003134          ADD     #1,ERTABL(R1)   ;ADD 1 TO THE PROPER UNIT'S ERROR COUNTER
3244 020126  005237  002172                  INC     FATFLG          ;BUMP FATAL ERROR COUNTER
3245 020132  023727  002172  000031          CMP     FATFLG,#25.     ;CHECK AGAINST 25
3246 020140  002406                          BLT     9$              ;BR, IF LESS THAN 25 ERRORS
3247 020142                                  RFLAGS  R0              ;READ THE FLAGS INTO R0
     020142  104421                          TRAP    C$RFLA
3248 020144  032700  040000                  BIT     #BIT14,R0       ;BR, IF LOOP ON ERROR IS SET
3249 020150  001002                          BNE     9$              ;OTHERWISE NEVER BE ABLE TO SCOPE ETC.
3250 020152  004737  020160                  JSR     PC,CKDROP       ;DROP UNIT IF ALLOWED
3251 020156  000207                  9$:     RTS     PC              ;RETURN ETC.
3252                                 ;
3253                                 ;
3254                                 ;
```

```
                                        .SBTTL  CKDROP  - CHECK IF UNIT SHOULD BE DROPPED
                                ;+
                                ; CHECK IF UNIT SHOULD BE DROPPED
                                ;-
020160  010046                  CKDROP: MOV     R0,-(SP)
020162                                  FORCERROR       1$,NOTSSR
020172                                  RFLAGS  R0
020172  104421                          TRAP    C$RFLA
020174  032700  000040                  BIT     #IDU,R0
020200  001010                          BNE     1$
020202  011600                          MOV     (SP),R0
020204  012737  177777  003064          MOV     #-1,DUFLG
020212                                  DODU    UNITN
020212  013700  002152                  MOV     UNITN,R0
020216  104451                          TRAP    C$DODU
020220                                  DOCLN                   ;ABORT THE PASS
020220  104444                          TRAP    C$DCLN
020222  012600                  1$:     MOV     (SP)+,R0
020224  000207                          RTS     PC



                                        .SBTTL  CONFIG  - DETERMINE CONFIGURATION OF SYSTEM
                                ;
                                ; SUBROUTINE - DETERMINE CONFIGURATION OF TK-25 SYSTEM.
                                ;
020226                          CONFIG:
020226  004737  016650                  JSR     PC,SOFINIT
020232  000207                          RTS     PC
```

```
                                        .SBTTL  KTON,KTOFF      - ENABLE/DISABLE MEMORY MANAGEMENT
                                ;
                                ; SUBROUTINE - ENABLE MEM MGT.
                                ;
020234  005737  003104          KTON:   TST     KTFLG           ; GOT KT?
020240  001403                          BEQ     1$              ; NO.
020242  012737  000001  177572          MOV     #1,SR0          ; YES. ENABLE KT11.
020250  000207                  1$:     RTS     PC


                                ;
                                ; SUBROUTINE - DISABLE MEM MGT.
                                ;
020252  005737  003104          KTOFF:  TST     KTFLG           ; GOT KT11?
020256  001405                          BEQ     1$              ; NO.
020260  000240                          NOP
020262  000240                          NOP
020264  012737  000000  177572          MOV     #0,SR0          ; DISABLE KT.
020272  000207                  1$:     RTS     PC
```

```
                                        .SBTTL  SETMAP  - SETUP PAR6 MAPPING

                                ;+
                                ;
                                ;THIS ROUTINE SETS UP KERNEL PAR6 TP HANDLE
                                ;AN 18 BIT ADDRESS. THE OFFSET INTO THE PAGE
                                ;IS RETURNED BIASED TO PAR6.
                                ;
                                ;INPUTS:
                                ;
                                ;       R0      HIGH ORDER ADDRESS BITS
                                ;       R1      LOW ORDER ADDRESS BITS
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      OFFSET INTO BLOCK WITH PAR6 BIAS (I.E. THE ADDRESS)
                                ;       CARRY   SET IF SUCCESS
                                ;               CLR IF ERROR
                                ;-
020274                          SETMAP:
020274                                  SAVREG                  ;SAVE R1-R4 UNTIL NEXT RETURN
020300  005737  003104                  TST     KTFLG           ;SYSTEM HAVE ABOVE 28K?
020304  001433                          BEQ     10$             ;BR IF NO
020306  010102                          MOV     R1,R2           ;SAVE LOW ORDER BITS
        000006                          .REPT   6
                                        ASR     R0              ;CONVERT WORD ADDRESS TO 32W BLOCKS
                                        ROR     R1              ;MAKE IT DOUBLE PRECISION
                                        .ENDR
020340  042701  000177                  BIC     #177,R1         ;ALINE FOR LOWER 4K BOUNDARY
020344  020137  003104                  CMP     R1,KTFLG        ;HIGHER THAN EXISTING MEMORY?
020350  103011                          BHIS    10$             ;BR IF YES
020352  010137  172354                  MOV     R1,@#KIPAR6     ;SETUP MAPPING REGISTER PAR6
020356  042702  160000                  BIC     #160000,R2      ;SETUP DISPLACEMENT IN PAGE
020362  062702  140000                  ADD     #140000,R2      ;ADD IN PAR6 BIAS
020366  010200                          MOV     R2,R0           ;RETURN IN R0
020370  000261                          SEC                     ;SET SUCCESS
020372  000401                          BR      15$             ;
020374  000241                  10$:    CLC                     ;SET FAILURE
020376  000207                  15$:    RTS     PC              ;RETURN
```

```
                                        .SBTTL  FILLMEM - FILL MEMORY WITH BACKGROUND PATTERN
                                ;+
                                ;  FILL MEMORY WITH A BACKGROUND PATTERN
                                ;
                                ; INPUTS:
                                ;
                                ;       R0 = BACKGROUND PATTERN
                                ;       FREE    = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
                                ;       KTFLG   = SET TO HIGHEST MEMORY LOCATION IF > 28K.
                                ;
                                ; OUTPUTS:
                                ;
                                ;       NONE
                                ;-
                                ;
020400                          FILLMEM:
020400                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
020404  004737  020252                  JSR     PC,KTOFF        ;DISABLE KT.
020410  010003                          MOV     R0,R3           ;COPY TEST PATTERN
020412  013701  003076                  MOV     FREE,R1         ;GET FIRST FREE LOCATION
020416  013702  003100                  MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
020422  010321                  10$:    MOV     R3,(R1)+        ;STORE A BACKGROUND WORD
020424  005302                          DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
020426  003375                          BGT     10$             ;BR IF NO
020430  005737  003104                  TST     KTFLG           ; GOT KT?
020434  001452                          BEQ     55$             ; NO. GET OUT.
020436  004737  020234                  JSR     PC,KTON         ; YES. ENABLE KT.
020442  005000                          CLR     R0              ;HIGH ORDER ADDRESS START
020444  013701  003110                  MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
        000006                          .REPT   6
                                        CLC                     ;CLEAR C BIT
                                        ROL     R1              ;CONVERT BLOCKS TO WORDS
                                        ROL     R0              ;MAKE IT DOUBLE PRECISION
                                        .ENDR
020514  004737  020274                  JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
020520  010320                  30$:    MOV     R3,(R0)+        ;STORE TEST PATTERN IN >28K ADDRESS
020522  020027  160000                  CMP     R0,#160000      ;END OF PAR6 MAPPING AREA?
020526  103774                          BLO     30$             ;BR IF NO
020530  162700  020000                  SUB     #20000,R0       ;BACKUP INTO PAR6 MAPPING BEGIN
020534  062737  000200  172354          ADD     #200,@#KIPAR6   ;POINT TO NEXT 4K BLOCK >28K.
020542  023737  172354  003104          CMP     @#KIPAR6,KTFLG  ;END OF MEMORY?
020550  001402                          BEQ     50$             ;BR IF YES
020552  000137  020520                  JMP     30$             ;KEEP GOING ON ETC.
020556  004737  020252          50$:    JSR     PC,KTOFF        ; DISABLE KT.
020562  000207                  55$:    RTS     PC
```

```
                                        .SBTTL  CMPMEM  - COMPARE MEMORY TO BACKGROUND PATTERN
                                ;+
                                ; COMPARE MEMORY WITH A BACKGROUND PATTERN
                                ;
                                ; INPUTS:
                                ;
                                ;       R0 = BACKGROUND PATTERN
                                ;       FREE    = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
                                ;       KTFLG   = SET TO HIGHEST MEMORY LOCATION IF > 28K.
                                ;
                                ; OUTPUTS:
                                ;
                                ;       CARRY   - SET IF NO ERROR
                                ;       CARRY   - CLR IF ERROR
                                ;
                                ; IMPLICIT OUTPUTS:
                                ;
                                ;       ERRHI   - ERROR HIGH ADDRESS
                                ;       ERRLO   - ERROR LOW ADDRESS
                                ;       EXPD    - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
020564                          CMPMEM:
020564                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
020570  010003                          MOV     R0,R3           ;COPY TEST PATTERN
020572  004737  020252                  JSR     PC,KTOFF        ;DISABLE KT.
020576  013701  003076                  MOV     FREE,R1         ;GET FIRST FREE LOCATION
020602  013702  003100                  MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
020606  020311                  10$:    CMP     R3,(R1)         ;FREE SPACE LOCATION EQUAL TO EXPD?
020610  001411                          BEQ     15$             ;BR IF YES
020612  010137  002206                  MOV     R1,ERRLO        ;SAVE ADDRESS IN ERROR
020616  005037  002204                  CLR     ERRHI           ;NO HIGH ADDRESS
020622  010337  002200                  MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
020626  011137  002202                  MOV     (R1),RECV       ;SAVE RECV FOR ERROR REPORT
020632  000474                          BR      50$             ;
020634  005721                  15$:    TST     (R1)+           ;POINT TO NEXT ADDRESS
020636  005302                          DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
020640  003362                          BGT     10$             ;BR IF NO
020642  005737  003104                  TST     KTFLG           ; GOT KT?
020646  001472                          BEQ     55$             ; NO. GET OUT.
020650  004737  020234                  JSR     PC,KTON         ; YES. ENABLE KT.
020654  005000                          CLR     R0              ;HIGH ORDER ADDRESS START
020656  013701  003110                  MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
        000006                          .REPT   6
                                        ROL     R1              ;CONVERT BLOCKS TO WORDS
                                        ROL     R0              ;MAKE IT DOUBLE PRECISION
                                        .ENDR
020712  042701  000177                  BIC     #177,R1         ;ALINE 4K BOUNDARY
020716  010046                          MOV     R0,-(SP)        ;SAVE HIGH ORDER
020720  010146                          MOV     R1,-(SP)        ;SAVE LOW ORDER
020722  004737  020274                  JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
020726  010004                          MOV     R0,R4           ;COPY ADDRESS BIASED TO PAR6
020730  012601                          MOV     (SP)+,R1        ;RESTORE LOW ORDER IN NON PAR6 FORMAT
020732  012600                          MOV     (SP)+,R0        ;RESTORE HIGH ORDER IN NON PAR6 FORMAT
020734  020314                  30$:    CMP     R3,(R4)         ;ABOVE 28K LOCATION EQUAL EXPD?
020736  001411                          BEQ     32$             ;BR IF YES
020740  010037  002204                  MOV     R0,ERRHI        ;SAVE HIGH ORDER IN ERROR
```

```
020744  010137  002206                  MOV     R1,ERRLO          ;SAVE LOW ORDER IN ERROR
020750  010337  002200                  MOV     R3,EXPD           ;SAVE EXPD FOR ERROR REPORT
020754  011437  002202                  MOV     (R4),RECV         ;SAVE RECV FOR ERROR REPORT
020760  000421                          BR      50$               ;
020762  062701  000002          32$:    ADD     #2,R1             ;UPDATE NON PAR6 ADDRESS
020766  005500                          ADC     R0                ;MAKE IT DOUBLE PRECISION ADD
020770  062704  000002                  ADD     #2,R4             ;UPDATE PAR FORMAT ADDRESS
020774  020427  160000                  CMP     R4,#160000        ;END OF PAR6 MAPPING AREA?
021000  103755                          BLO     30$               ;BR IF NO
021002  162704  020000                  SUB     #20000,R4         ;BACKUP INTO PAR6 MAPPING BEGIN
021006  062737  000200  172354          ADD     #200,@#KIPAR6     ;POINT TO NEXT 4K BLOCK >28K.
021014  023737  172354  003104          CMP     @#KIPAR6,KTFLG    ;END OF MEMORY?
021022  101744                          BLOS    30$               ;BR IF NO
021024  004737  020252          50$:    JSR     PC,KTOFF          ;TURN OFF MEMORY MAPPING
021030  000241                          CLC                       ;SET FAILURE
021032  000403                          BR      60$               ;
021034  004737  020252          55$:    JSR     PC,KTOFF          ;TURN OFF MEMORY MAPPING
021040  000261                          SEC                       ;SET SUCCESS
021042  000207                  60$:    RTS     PC
```

```
                                        .SBTTL  REGSAV  - SAVE R1-R5 ON STACK
                                ;+
                                ;
                                ;ROUTINE TO
                                ;SAVE R1 THROUGH R5 ON THE STACK
                                ;
                                ;CALLING SEQUENCE:
                                ;
                                ;       JSR     R5,REGSAV
                                ;
                                ;THIS IS A COOROUTINE WHICH TRANSFER CONTROL BACK TO
                                ;THE CALLING ROUTINE. AT THE END OF THE CALLING ROUTINE,
                                ;THE RTS PC RETURNS CONTROL TO THIS ROUTINE TO RESTORE
                                ;REGISTERS.
                                ;
                                ;THIS ROUTINE SHOULD ONLY BE CALLED FROM ROUTINES WHICH ARE
                                ;CALLED VIA A JSR PC INSTRUCTION
                                ;
                                ;-

021044                          REGSAV:
021044                                  BREAK                   ;LOOK FOR CNTL C
021044  104422                          TRAP    C$BRK
021046  010446                          MOV     R4,-(SP)
021050  010346                          MOV     R3,-(SP)
021052  010246                          MOV     R2,-(SP)
021054  010146                          MOV     R1,-(SP)
021056  010546                          MOV     R5,-(SP)
021060  016605  000012                  MOV     10.(SP),R5
021064  004736                          JSR     PC,@(SP)+
021066  012601                          MOV     (SP)+,R1
021070  012602                          MOV     (SP)+,R2
021072  012603                          MOV     (SP)+,R3
021074  012604                          MOV     (SP)+,R4
021076  012605                          MOV     (SP)+,R5
021100                                  BREAK                   ;LOOK FOR CNTL C
021100  104422                          TRAP    C$BRK
021102  000207                          RTS     PC
```

```
                                        .SBTTL  GETPAT  - GET 8 BIT PATTERN FROM OPERATOR
                                ;+
                                ;
                                ;ROUTINE TO REQUEST AN 8 BIT DATA PATTERN FROM THE OPERATOR
                                ;
                                ;INPUTS:
                                ;
                                ;       NONE.
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      OCTAL NUMBER FROM THE OPERATOR
                                ;
                                ;CALLING SEQUENCE:
                                ;
                                ;       JSR     PC,GETPAT
                                ;
                                ;-

021104                          GETPAT::
021104                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
021110                          1$:     GMANID  DATASC,PATDAT,0,377,0,377,NO
021110  104443                          TRAP    C$GMAN
021112  000406                          BR      10000$
021114  021140                          .WORD   PATDAT
021116  000022                          .WORD   T$CODE
021120  021142                          .WORD   DATASC
021122  000377                          .WORD   377
021124  000000                          .WORD   T$LOLIM
021126  000377                          .WORD   T$HILIM
021130                          10000$:
021130                                  BNCOMPLETE      1$              ;RETRY IF ERROR
021130  103367                          BCC     1$
021132  013700  021140                  MOV     PATDAT,R0               ;DATA PATTERN FROM OPERATOR
021136  000207                          RTS     PC                      ;RETURN TO CALLER

                                ;+
                                ;LOCAL DATA AREA
                                ;-

021140  000000                  PATDAT: .WORD   0                       ;TEMPORARY STORAGE FOR DATA
021142     105     116     124  DATASC: .ASCIZ  'ENTER DATA PATTERN'
                                        .EVEN
```

```
                                        .SBTTL  GETSEL  - ISSUE MENU AND GET OPERATOR RESPONSE
                                ;+
                                ;ROUTINE TO ISSUE A MENU AND GET
                                ;THE OPERATOR'S RESPONSE.
                                ;
                                ;INPUTS:
                                ;
                                ;       R0      ADDRESS OF ASCIZ STRING OF MENU
                                ;       R1      MAXIMUM ALLOWABLE OPERATOR RESPONSE
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      NUMBER OF THE OPERATOR'S SELECTION
                                ;-
021166                          GETSEL::
021166                                  SAVREG                          ;SAVE GENERAL REGISTERS
021172  010002                          MOV     R0,R2                   ;SAVE THE MENU ADDRESS
021174  010203                  1$:     MOV     R2,R3                   ;START OF MENU STRING
021176  005713                  2$:     TST     (R3)                    ;END OF ASCII ?
021200  001412                          BEQ     3$                      ;BRANCH IF ALL LINES DISPLAYED
021202                                  PRINTF  #SELASC,(R3)+           ;DISPLAY THE MENU
021202  012346                          MOV     (R3)+,-(SP)
021204  012746  021352                  MOV     #SELASC,-(SP)
021210  012746  000002                  MOV     #2,-(SP)
021214  010600                          MOV     SP,R0
021216  104417                          TRAP    C$PNTF
021220  062706  000006                  ADD     #6,SP
021224  000764                          BR      2$
021226                          3$:     GMANID  MENASC,MENRES,D,-1,0,-1,N0
021226  104443                          TRAP    C$GMAN
021230  000406                          BR      10001$
021232  021406                          .WORD   MENRES
021234  000042                          .WORD   T$CODE
021236  021357                          .WORD   MENASC
021240  177777                          .WORD   -1
021242  000000                          .WORD   T$LOLIM
021244  177777                          .WORD   T$HILIM
021246                          10001$:
021246                                  BNCOMPLETE      1$              ;RETRY IF ERROR
021246  103352                          BCC     1$
021250  013700  021406                  MOV     MENRES,R0               ;GET THE OPERATOR'S REPLY
021254  020001                          CMP     R0,R1                   ;COMPARE TO MAXIMUM ALLOWED
021256  101411                          BLOS    5$                      ;BRANCH IF OK
021260                                  PRINTF  #MENERR                 ;DISPLAY ERROR MESSAGE
021260  012746  021304                  MOV     #MENERR,-(SP)
021264  012746  000001                  MOV     #1,-(SP)
021270  010600                          MOV     SP,R0
021272  104417                          TRAP    C$PNTF
021274  062706  000004                  ADD     #4,SP
021300  000735                          BR      1$                      ;RETRY
021302  000207                  5$:     RTS     PC                      ;RETURN TO CALLER
021304     045     116     045  MENERR: .ASCIZ  '<N><A *** Menu Selection Too Large ***'
021352     045     116     045  SELASC: .ASCIZ  '<N><T'
021357     105     156     164  MENASC: .ASCIZ  'Enter Menu Selection: '
                                        .EVEN
021406  000000                  MENRES:         .WORD   0
```

```
                                        .SBTTL  CHKMAN   - CHECK MANUAL INTERVENTION LEGALITY
                                ;+
                                ;
                                ;ROUTINE TO TEST FOR MANUAL INTERVENTION LEGALITY.
                                ;
                                ;INPUT:
                                ;
                                ;       NONE.
                                ;
                                ;OUTPUT:
                                ;
                                ;       CARRY   0       MANUAL INTERVENTION NOT ALLOWED
                                ;               1       MANUAL INTERVENTION IS OK
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;       A MESSAGE IS DISPLAYED WARNING THAT TEST IS
                                ;       NOT EXECUTED IF MANUAL INTERVENTION IS NOT
                                ;       ALLOWED.
                                ;
                                ;-

021410                          CHKMAN::
                                        SAVREG                  ;SAVE THE REGISTERS
021410                                  MANUAL                  ;SEE IF MANUAL INTERVENTION OK
021414  104450                          TRAP    C$MANI
021416                                  BCOMPLETE 1$            ;BRANCH IF ALLOWED
021416  103411                          BCS     1$
021420                                  PRINTF  #NOMAN          ;PRINT THE WARNING MESSAGE
021420  012746  021444                  MOV     #NOMAN,-(SP)
021424  012746  000001                  MOV     #1,-(SP)
021430  010600                          MOV     SP,R0
021432  104417                          TRAP    C$PNTF
021434  062706  000004                  ADD     #4,SP
021440  000241                          CLC                     ;CLEAR CARRY FOR ERROR
021442  000207                  1$:     RTS     PC              ;RETURN

021444     045     116     045  NOMAN:  .ASCIZ  '%N%A *** Manual Intervention not Allowed - Test Aborted ***'
                                        .even
```

```
                                                .SBTTL  ENVIRN  - SETUP FREE DIAGNOSTIC SPACE
                                        ;
                                        ; SUBROUTINE TO SET-UP VARIOUS ENVIRONMENTAL PARAMETERS.
                                        ;
021540                                  ENVIRN: MEMORY  R0
021540  104431                                  TRAP    C$MEM
021542  010037  003076                          MOV     R0,FREE         ; GET 1ST FREE ADDRESS...
021546  062737  000002  003076                  ADD     Ø2,FREE
021554  011037  003100                          MOV     (R0),FRESIZ     ;...AND WORD COUNT.
021560  162737  000004  003100                  SUB     Ø4,FRESIZ
021566  013702  002012                          MOV     L$UNIT,R2       ; GET NUMBER OF UNITS
021572  162737  000007  003100  10$:            SUB     Ø7,FRESIZ       ; TAKE AWAY 7 WORDS PER UNIT
021600  005302                                  DEC     R2
021602  001373                                  BNE     10$
021604  013700  003076                          MOV     FREE,R0         ;GET FIRST FREE ADDRESS
021610  063700  003100                          ADD     FRESIZ,R0       ;POINT TO LAST FREE ADDRESS
021614  162700  000002                          SUB     Ø2,R0           ;BACKUP 1 WORD
021620  010037  003102                          MOV     R0,FREEHI       ;STORE LAST FREE ADDRESS
021624  000207                                  RTS     PC              ;RETURN
```

```
                                                .SBTTL  KTINIT  - SETUP KT11 MEMORY MANAGEMENT REGISTERS
                                ;+
                                ;
                                ;ROUTINE TO INIT KT-11
                                ;
                                ;-

021626                          KTINIT:
021626  005037  003104                  CLR     KTFLG           ; INIT >28K MEMORY FLAG
021632  005037  003106                  CLR     KTENABLE        ; INIT TEST >28K FLAG
021636  023727  002120  001577          CMP     L$HIME,#1577    ; GOT ENOUGH MEMORY (>28K)?
021644  101444                          BLOS    9$              ; NO.
021646  013700  000004                  MOV     @#ERRVEC,R0     ; SAVE OLD ERR VEC PTR.
021652  012737  021744  000004          MOV     #2$,@#ERRVEC    ; SET ERR VEC PTR.
021660  005737  177572                  TST     @#SR0           ; GOT KT11?
021664  000240                          NOP                     ;  (TRAP IF NO).
021666  013737  002120  003104          MOV     L$HIME,KTFLG    ; YES. SET KT FLAG.
021674  042737  000177  003104          BIC     #177,KTFLG      ;
021702  010037  000004                  MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
021706  005000                          CLR     R0              ; R0 = AR DATA.
021710  012701  172340                  MOV     #KIPAR0,R1      ; R1 = KI REGS PTR.
021714  012761  077406  177740  1$:     MOV     #77406,-40(R1)  ; SET DESCRIPTOR REG.
021722  010021                          MOV     R0,(R1)+        ; SET KIPAR REG.
021724  062700  000200                  ADD     #200,R0         ; BUMP AR DATA BY "4K".
021730  020027  002000                  CMP     R0,#2000        ; AT "I/O"?
021734  001367                          BNE     1$              ; NO.
021736  012741  177600                  MOV     #177600,-(R1)   ; YES. SET KTPAR7 FOR I/O.
021742  000405                          BR      9$

021744  012716  021752          2$:     MOV     #6$,(SP)        ; SET UP RETURN
021750  000002                          RTI                     ; RTI TO NEXT LOCATION

021752  010037  000004          6$:     MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.

021756  000207                  9$:     RTS     PC
```

```
                                                .SBTTL  PROTECTION TABLE
021760                                          BGNPROT
021760                                  L$PROT::
021760  177777  177777  177777                  .WORD   -1, -1, -1, -1  ;NO DEVICE PROTECTION REQUIRED.
021770                                          ENDPROT
```

```
                                        .SBTTL  INITIALIZE SECTION

                                ;++
                                ;THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
                                ;AT THE BEGINNING OF EACH PASS.
                                ;
                                ;IF "START" OR "RESTART", SET QUICK-PASS FLAG AND BUS-INIT.
                                ;IF "CONTINUE", NOTHING IS REQUIRED.
                                ;
                                ;--
 021770                                 BGNINIT
 021770                         L$INIT::
 021770                         40$:
 021770  012737  005676  002150         MOV     #EPRT1,EPRTSW   ;SET UP PRIMARY MESSAGE FOR REPLACEMENT
 021776  005037  003112                 CLR     SIFLAG          ;CLEAR "SOFT INIT" FLAG
 022002  005037  003106                 CLR     KTENABLE        ;CLEAR TEST ABOVE 28K FLAG
 022006  005037  002250                 CLR     RAMSIZ          ;CLEAR RAM SIZE FOR RAMERR ROUTINE
 022012                                 READEF  #EF.CONTINUE
 022012  012700  000036                 MOV     #EF.CONTINUE,R0
 022016  104447                         TRAP    C$REFG
 022020                                 BNCOMPLETE 1$
 022020  103023                         BCC     1$
 022022  023737  002152  002012         CMP     UNITN,L$UNIT    ;UNIT IN RANGE?
 022030  103066                         BHIS    4$              ;BR IF NO.
 022032  005737  003064                 TST     DUFLG           ;DROPPED UNIT?
 022036  100470                         BMI     NXTU            ;BR IF YES
 022040  013701  002152                 MOV     UNITN,R1
 022044  006301                         ASL     R1
 022046  005761  003134                 TST     ERTABL(R1)
 022052  001514                         BEQ     SETU
 022054  032761  040000  003134         BIT     #BIT14,ERTABL(R1) ;DROPPED?
 022062  001056                         BNE     NXTU
 022064                                 EXIT    INIT            ;DO NOTHING IF "CONTINUE".
 022064  104432                         TRAP    C$EXIT
 022066  000416                         .WORD   L10030-.
 022070                         1$:     READEF  #EF.NEW
 022070  012700  000035                 MOV     #EF.NEW,R0
 022074  104447                         TRAP    C$REFG
 022076                                 BNCOMPLETE NXTU         ;TAKE NEXT UNIT IF NOT NEW PASS.
 022076  103050                         BCC     NXTU
 022100                                 READEF  #EF.START
 022100  012700  000040                 MOV     #EF.START,R0
 022104  104447                         TRAP    C$REFG
 022106                                 BCOMPLETE 2$
 022106  103404                         BCS     2$
 022110                                 READEF  #EF.RESTART
 022110  012700  000037                 MOV     #EF.RESTART,R0
 022114  104447                         TRAP    C$REFG
 022116                                 BNCOMPLETE 31$
 022116  103027                         BCC     31$
 022120                         2$:                             ;1ST PASS, BUS-INIT...
 022120                                 BRESET                  ;BUS RESET.
 022120  104433                         TRAP    C$RESET
 022122  005037  002164                 CLR     TSTCNT          ;NUMBER OF TESTS RUN IN PASS
 022126  005037  002722                 CLR     FLLTSW          ;SHOW 1ST PASS ON FAULT LIGHT MESSAGE SW
 022132  005037  002172                 CLR     FATFLG          ;RESET FLAG TO ZERO "FATAL ERRORS"
 022136  005037  003336         19$:    CLR     SKIPT           ;CLEAR THE SUBTEST "SKIPPER"
```

```
022142                          20$:
022142  012737  177777  002154          MOV     #-1,QVP         ;...QUICK VERIFY...
022150  004737  021540                  JSR     PC,ENVIRN       ;SET ENVIRONMENT.
022154  004737  021626                  JSR     PC,KTINIT       ;INITIALIZE KT MEMORY MANAGEMENT
022160  012700  003134                  MOV     #ERTABL,R0
022164  005020                  30$:    CLR     (R0)+           ;CLEAR THE ERROR TABLE
022166  020027  003334                  CMP     R0,#ERTABE
022172  103774                          BLO     30$
022174  000404                          BR      4$
022176  005037  002154          31$:    CLR     QVP
022202  000137  022252                  JMP     PASRPT          ;GO REPORT THE STATUS

022206                          4$:
022206  012737  177777  002152  NEWPAS: MOV     #-1,UNITN       ;INIT UNIT NUMBER...
022214  005037  002170                  CLR     DEVCNT          ;CLEAR COUNT OF DEVICES RUNNING
022220                          NXTU:   BREAK
022220  104422                          TRAP    C$BRK
022222  005237  002152                  INC     UNITN           ;...AND SET NEXT UNIT NUMBER.
022226  023737  002152  002012          CMP     UNITN,L$UNIT
022234  103423                          BLO     SETU
022236  012737  177777  003064          MOV     #-1,DUFLG
022244  000401                          BR      11$
022246                                  DOCLN                   ;ABORT, NO MORE UNITS.
022246  104444                          TRAP    C$DCLN
022250  000240                  11$:    NOP
022252                          PASRPT:
022252  023727  002012  000001          CMP     L$UNIT,#1       ;HOW MANY UNITS SELECTED?
022260  101752                          BLOS    NEWPAS          ;BR IF ONLY 1
022262  005737  002170                  TST     DEVCNT          ;ARE ANY STILL RUNNING?
022266  001747                          BEQ     NEWPAS          ;BR IF NO
022270                                  RFLAGS  R0
022270  104421                          TRAP    C$RFLA
022272  032700  000100                  BIT     #ISR,R0         ;SHOULD WE PRINT STATISTICS
022276  001343                          BNE     NEWPAS          ;BR IF NO

022300                                  DORPT
022300  104424                          TRAP    C$DRPT
022302  000741                          BR      NEWPAS
022304                          10$:

022304                          SETU:   GPHARD  UNITN,R0        ;GET UNIT N P-TABLE POINTER.
022304  013700  002152                  MOV     UNITN,R0
022310  104442                          TRAP    C$GPHRD
022312                                  BNCOMPLETE NXTU         ;BR IF UNIT NOT AVAILABLE.
022312  103342                          BCC     NXTU
022314  005037  003064                  CLR     DUFLG           ;CLEAR "DROPPED" FLAG.
022320  005237  002170                  INC     DEVCNT
022324  012001                          MOV     (R0)+,R1        ;GET 1ST REGISTER ADDRESS.
022326  010137  002156                  MOV     R1,CSRADDR      ;ADDRESS OF REGISTERS OF UNIT UNDER TEST

022332  012001                          MOV     (R0)+,R1        ;GET VECTOR ADDRESS.
022334  011002                          MOV     (R0),R2         ;GET INTERRUPT PRIORITY
022336  010237  002162                  MOV     R2,IPRI         ;SET INTERRUPT PRIORITY.
022342  010137  002160                  MOV     R1,IVEC         ;SET INTERRUPT VECTOR POINTER...
022346  012721  017072                  MOV     #INTR,(R1)+     ;...VECTOR...
022352  010221                          MOV     R2,(R1)+        ;...AND PRIORITY.
```

```
022354                          1$:
                                ;       TST     QVP             ;1ST PASS ??
                                ;       BEQ     5$              ;NO, SKIP THE PASS 1 STUFF.

                                ;
                                ;1ST PASS, CHECK THAT DEVICE ADDRESSES ARE VALID, AND
                                ;THAT THE DISPLAY STATUS IS PROPERLY INITIALIZED.
                                ;
022354  013701  002152                  MOV     UNITN,R1
022360  006301                          ASL     R1
022362  052761  100000  003134          BIS     #BIT15,ERTABL(R1) ;SAY DEVICE RUNNING
022370  005037  005236                  CLR     EXTA            ;CLEAR ERROR EXTENSION FLAG.
022374  023727  002012  000001          CMP     L$UNIT,#1       ;ARE WE TESTING MULTIPLE UNITS?
022402  101416                          BLOS    10$             ;BR IF NO.
022404                                  RFLAGS  R0              ;YES -- GET OPERATOR FLAGS.
022404  104421                          TRAP    C$RFLA
022406  032700  001000                  BIT     #PNT,R0         ;SHOULD WE PRINT UNIT #?
022412  001412                          BEQ     10$             ;BR IF NOT.
022414                                  PRINTF  #PUNIT,UNITN    ;PRINT THE UNIT #
022414  013746  002152                  MOV     UNITN,-(SP)
022420  012746  022506                  MOV     #PUNIT,-(SP)
022424  012746  000002                  MOV     #2,-(SP)
022430  010600                          MOV     SP,R0
022432  104417                          TRAP    C$PNTF
022434  062706  000006                  ADD     #6,SP
022440                          10$:
022440  005037  003066                  CLR     NODEV
022444  013701  002156                  MOV     CSRADDR,R1      ;ADDRESS OF FIRST REGISTER
022450  010102                          MOV     R1,R2           ;START OF REGISTERS
022452  062702  000000                  ADD     #TSSR,R2        ;ADDRESS OF TSSR REGISTER
022456  004737  017302                  JSR     PC,XNXM         ;TEST BOTH CONTROLLER REGISTERS...
022462  103005                          BCC     2$              ;...AND BR IF ALL OK.
022464  010137  003066                  MOV     R1,NODEV        ;FLAG DEVICE AS NON-EXISTENT
022470  012737  177777  003064          MOV     #-1,DUFLG       ;DROP THIS UNIT.
022476                          2$:
                                ;
                                ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
                                ;
022476                          5$:     SETPRI  #PRI00          ;ENABLE INTERRUPTS.
022476  012700  000000                  MOV     #PRI00,R0
022502  104441                          TRAP    C$SPRI
022504                                  ENDINIT
022504                          L10030:
022504  104411                          TRAP    C$INIT

022506     045     116     045  PUNIT:  .ASCIZ  /%N%N%A***** TESTING UNIT %D2%A *****/
                                        .EVEN
```

```
                                        .SBTTL  ADD AND DROP UNITS SECTIONS

                                ;++
                                ; THE ADD-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
                                ; TO BE (A) ADDED TO THE TEST LIST FOR THE FIRST TIME,
                                ;    OR (B) RE-INSERTED IF IT HAD BEEN PREVIOUSLY DROPPED.
                                ;--
022554                                  BGNAU
022554                          L$AU::
022554  010001                          MOV     R0,R1           ; GET UNIT TO BE ADDED (R0)
022556  006301                          ASL     R1              ; MAKE IT A WORD INDEX
022560  052761  100000  003134          BIS     #100000,ERTABL(R1) ; SET THE "ACTIVE" BIT
022566  042761  040000  003134          BIC     #40000,ERTABL(R1)  ; CLEAR THE "DROPPED" BIT
022574                                  PRINTF  #1$,R0
022574  010046                          MOV     R0,-(SP)
022576  012746  022622                  MOV     #1$,-(SP)
022602  012746  000002                  MOV     #2,-(SP)
022606  010600                          MOV     SP,R0
022610  104417                          TRAP    C$PNTF
022612  062706  000006                  ADD     #6,SP
022616                                  EXIT    AU
022616  000167                          .WORD   J$JMP
022620  000026                          .WORD   L10031-2-.
022622     045     116     045  1$:    .ASCIZ  /%N%A  UNIT %D%A ADDED/
                                        .EVEN

022650                                  ENDAU                   ; UNUSED.
022650                          L10031:
022650  104452                          TRAP    C$AU
                                ;++
                                ; THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
                                ; TO BE REMOVED FROM THE TEST LIST.
                                ;
                                ; SUPVSR DOES THE "DROPPING".  THIS IS JUST TO TELL THE MAN.
                                ; "DROPPED" UNITS ARE RE-SELECTED ON OPERATOR "STA" OR "ADD"
                                ; COMMAND, OTHERWISE REMAIN INACTIVE.  THE "DISPLAY" COMMAND
                                ; WILL PRINT ALL DROPPED UNITS, AND THE P-TABLES OF THOSE
                                ; WHICH ARE STILL ACTIVE.
                                ; UPON ENTRY, R0 CONTAINS THE UNIT TO BE DROPPED.

022652                                  BGNDU
022652                          L$DU::
022652  012737  177777  003064          MOV     #-1,DUFLG
022660  010001                          MOV     R0,R1
022662  006301                          ASL     R1
022664  052761  140000  003134          BIS     #140000,ERTABL(R1)      ; SAY DROPPED
022672  000240  000240  000240          240,240,240                     ; ?????????
022700                                  PRINTF  #1$,R0
022700  010046                          MOV     R0,-(SP)
022702  012746  022726                  MOV     #1$,-(SP)
022706  012746  000002                  MOV     #2,-(SP)
022712  010600                          MOV     SP,R0
022714  104417                          TRAP    C$PNTF
022716  062706  000006                  ADD     #6,SP
022722                                  EXIT    DU
022722  000167                          .WORD   J$JMP
022724  000030                          .WORD   L10032-2-.
```

```
022726     045     116     045  1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
                                        .EVEN
022756                                  ENDDU
022756                          L10032:
022756  104453                          TRAP    C$DU
                                ;++
                                ; AUTO-DROP CODE SECTION.
                                ;--
022760                                  BGNAUTO
022760                          L$AUTO::
022760  012703  000550                  MOV     #360.,R3        ;ENOUGH TIME FOR 2400' REEL TO REWIND
022764  004737  017124          10$:    JSR     PC,WAITF        ;WAIT FOR SSR TO SET
022770  103420                          BCS     20$             ;LEAVE WHEN SSR IS SET
022772                                  DELAY   250.            ;WAIT FOR .25 SECONDS
022772  012727  000372                  MOV     #250.,(PC)+
022776  000000                          .WORD   0
023000  013727  002116                  MOV     L$DLY,(PC)+
023004  000000                          .WORD   0
023006  005367  177772                  DEC     -6(PC)
023012  001375                          BNE     .-4
023014  005367  177756                  DEC     -22(PC)
023020  001367                          BNE     .-20
023022  005303                          DEC     R3              ;BUMP COUNTER DOWN
023024  001357                          BNE     10$             ;KEEP GOING
023026  004737  020160                  JSR     PC,CKDROP       ;TRY AND DROP UNIT
023032                          20$:
023032                                  ENDAUTO                 ; UNUSED.
023032                          L10033:
023032  104461                          TRAP    C$AUTO
```

```
                                        .SBTTL  CLEAN-UP AND REPORT CODING SECTIONS

                                ;++
                                ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS
                                ; EXECUTED AT THE END OF EACH PASS (OR SUB-PASS).
                                ; USE TO RETURN DEVICE UNDER TEST TO A NEUTRAL STATE.
                                ;--
023034                                  BGNCLN
023034                          L$CLEAN::
023034  005737  003064                  TST     DUFLG           ;"DROPPED" FLAG IS SET ON...
023040  100407                          BMI     1$              ;...AND GROSS CONTROLLER FAULT...
                                                                ;...DON'T TRY TO XCT CLEANUP CODE.

023042  013705  002156                  MOV     CSRADDR,R5      ; ADDRESS OF TSV REGISTERS ON UNIBUS
023046  012765  000000  000000          MOV     #0,TSSR(R5)     ;DO SOFT INIT
023054  004737  017124                  JSR     PC,WAITF
023060                          1$:
023060                          2$:     ENDCLN
023060                          L10034:
023060  104412                          TRAP    C$CLEAN
                                ;++
                                ; THE REPORT CODING SECTION CONTAINS THE
                                ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
                                ;--
023062                                  BGNRPT
023062                          L$RPT::
023062                                  PRINTS  #DEVSUM
023062  012746  023324                  MOV     #DEVSUM,-(SP)
023066  012746  000001                  MOV     #1,-(SP)
023072  010600                          MOV     SP,R0
023074  104416                          TRAP    C$PNTS
023076  062706  000004                  ADD     #4,SP
023102  010246                          MOV     R2,-(SP)
023104  010346                          MOV     R3,-(SP)
023106  010446                          MOV     R4,-(SP)
023110  012704  003134                  MOV     #ERTABL,R4      ; GET START OF ERROR TABLE.
023114  005003                          CLR     R3              ; CLEAR UNIT NUMBER
023116  011402                  1$:     MOV     (R4),R2         ; GET ERROR TABLE ENTRY & TEST IT.
023120  001467                          BEQ     4$              ; ZERO IF UNIT NOT RUN
023122  100066                          BPL     4$
023124  032702  040000                  BIT     #BIT14,R2       ; WAS UNIT DROPPED?
023130  001015                          BNE     2$              ; BR IF YES
023132  042702  170000                  BIC     #^C7777,R2      ; GET ERROR COUNT FIELD
023136                                  PRINTS  #DEVONL,R3,R2   ; PRINT
023136  010246                          MOV     R2,-(SP)
023140  010346                          MOV     R3,-(SP)
023142  012746  023361                  MOV     #DEVONL,-(SP)
023146  012746  000003                  MOV     #3,-(SP)
023152  010600                          MOV     SP,R0
023154  104416                          TRAP    C$PNTS
023156  062706  000010                  ADD     #10,SP
023162  000446                          BR      4$
023164  020227  160000          2$:     CMP     R2,#160000      ; WAS UNIT NON-EXISTENT?
023170  001012                          BNE     3$              ; BR IF NO
023172                                  PRINTS  #DEVNXR,R3
023172  010346                          MOV     R3,-(SP)
023174  012746  023431                  MOV     #DEVNXR,-(SP)
```

```
        023200  012746  000002                  MOV     #2,-(SP)
        023204  010600                          MOV     SP,R0
        023206  104416                          TRAP    C$PNTS
        023210  062706  000006                  ADD     #6,SP
   3916 023214  000431                          BR      4$
   3917 023216  020227  160001          3$:     CMP     R2,#160001      ; WAS UNIT NOT READY AT STARTUP?
   3918 023222  001012                          BNE     30$             ; BR IF NO.
   3919 023224                                  PRINTS  #DEVNRD,R3
        023224  010346                          MOV     R3,-(SP)
        023226  012746  023513                  MOV     #DEVNRD,-(SP)
        023232  012746  000002                  MOV     #2,-(SP)
        023236  010600                          MOV     SP,R0
        023240  104416                          TRAP    C$PNTS
        023242  062706  000006                  ADD     #6,SP
   3920 023246  000414                          BR      4$
   3921 023250  042702  170000          30$:    BIC     #^C7777,R2
   3922 023254                                  PRINTS  #DEVDRO,R3,R2
        023254  010246                          MOV     R2,-(SP)
        023256  010346                          MOV     R3,-(SP)
        023260  012746  023574                  MOV     #DEVDRO,-(SP)
        023264  012746  000003                  MOV     #3,-(SP)
        023270  010600                          MOV     SP,R0
        023272  104416                          TRAP    C$PNTS
        023274  062706  000010                  ADD     #10,SP
   3923 023300  062704  000002          4$:     ADD     #2,R4
   3924 023304  005203                          INC     R3
   3925 023306  020427  003334                  CMP     R4,#ERTABE
   3926 023312  103701                          BLO     1$
   3927 023314  012604                          MOV     (SP)+,R4
   3928 023316  012603                          MOV     (SP)+,R3
   3929 023320  012602                          MOV     (SP)+,R2
   3930 023322                                  ENDRPT                  ; UNUSED.
        023322                          L10035:
        023322  104425                          TRAP    C$RPT
   3931
   3932
   3933 023324     045     116     045  DEVSUM: .ASCIZ  /#N#ADEVICE STATUS SUMMARY:#N/
   3934 023361     045     101     040  DEVONL: .ASCIZ  /#A  UNIT #D3#A   ONLINE,  ERRORS = #D#N/
   3935 023431     045     101     040  DEVNXR: .ASCIZ  /#A  UNIT #D3#A   DROPPED, NON-EXISTENT REGISTER#N/
   3936 023513     045     101     040  DEVNRD: .ASCIZ  /#A  UNIT #D3#A   DROPPED, NOT READY AT STARTUP#N/
   3937 023574     045     101     040  DEVDRO: .ASCIZ  /#A  UNIT #D3#A   DROPPED, ERRORS = #D#N/
   3938                                         .EVEN
   3941
   3948
   3954
```

```
                                        .SBTTL  TEST  1: WRITE TAPE MARK RETRY
                                ;+
                                ;
                                ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE TAPE MARK RETRY COMMAND (SPACE
                                ;REVERSE, ERASE, WRITE TAPE MARK). SUBTESTS ARE AS FOLLOWS:
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 4 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
023644                                  BGNTST
023644                                                                                  T1::
023644  005037  002172                  CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
023650  005037  003104                  CLR     KTFLG           ;HOLD OFF KT11
023654  012737  005676  002150          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
023662  012700  032111                  MOV     #TST29ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
023666  004737  017414                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
023672  012737  000001  002166          MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
023700  005037  026544                  CLR     T29CNT                  ;CLEAR TAPE RECORD COUNTER
023704                          T29LOOP:
```

```
                                        ;+
                                        ;
                                        ;TEST 1, SUBTEST 1
                                        ;
                                        ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE
                                        ;TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT TERMINATION, WITH THE
                                        ;NON-EXECUTABLE FUNCTION (NE ) ERROR BIT SET.
                                        ;
                                        ;
                                        ;
                                        ;-
023704                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
023704                                                                                          T1.1:
023704  104402                                                                                          TRAP    C$BSUB
023706  004737  032140                          JSR     PC,T29REST              ;SET COMMAND PACKET
023712  004737  032232                          JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
023716  004737  032274                          JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
023722  012737  023420  026550                  MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
023730  004737  016650                  10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
023734  103426                                  BCS     20$                     ;BR IF INIT WAS OK
023736                                          DELAY   250                     ;DELAY ABOUT .25 SECONDS
023736  012727  000250                                                                          MOV     #250,(PC)+
023742  000000                                                                                  .WORD   0
023744  013727  002116                                                                          MOV     L$DLY,(PC)+
023750  000000                                                                                  .WORD   0
023752  005367  177772                                                                          DEC     -6(PC)
023756  001375                                                                                  BNE     .-4
023760  005367  177756                                                                          DEC     -22(PC)
023764  001367                                                                                  BNE     .-20
023766  005337  026550                          DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
023772  001356                                  BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
023774  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
024000  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
024002                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
024002  104455                                                                                  TRAP    C$ERDF
024004  000145                                                                                  .WORD   101
024006  003554                                                                                  .WORD   SFIERR
024010  011666                                                                                  .WORD   SFIMSG
024012                                  20$:
                                                                                                
024012  012704  026360                          MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
024016  004737  010332                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
024022  103407                                  BCS     25$                     ;BR, IF COMMAND ISSUED OK
024024  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
024030  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
024032                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
024032  104456                                                                                  TRAP    C$ERHRD
024034  000146                                                                                  .WORD   102
024036  004760                                                                                  .WORD   WRTMSG
024040  011666                                                                                  .WORD   SFIMSG
024042                                  25$:    CKLOOP                          ;LOOP IF SELECTED
024042  104406                                                                                  TRAP    C$CLP1
024044  016501  000000                          MOV     TSSR(R5),R1             ;GET THE TSSR
024050  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
024052  042702  000100                          BIC     #OFL,R2                 ;OFF LINE SHOULD NOT BE SET
024056  020102                                  CMP     R1,R2                   ;THEY SHOULD BE EQUAL
024060  001406                                  BEQ     26$                     ;BR, IF OFL IS NOT SET
```

```
4037 024062                                ERRDF   ERRNO,T29OFL,EXPREC     ;DRIVE IS OFF LINE
     024062  104455                                                                            TRAP    C$ERDF
     024064  000147                                                                            .WORD   103
     024066  026552                                                                            .WORD   T29OFL
     024070  016350                                                                            .WORD   EXPREC
4038 024072  004737  020160                JSR     PC,CKDROP               ;TRY AND DROP DRIVE
4039 024076  004737  010434          26$:  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4040 024102  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
4041 024106  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
4042 024112  103407                        BCS     30$                     ;BR. IF NO PROBLEM
4043 024114  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
4044 024116  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4048 024122                                ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
     024122  104456                                                                            TRAP    C$ERHRD
     024124  000150                                                                            .WORD   104
     024126  030270                                                                            .WORD   T29RWN
     024130  011700                                                                            .WORD   PKTSSR
4049 024132                          30$:  CKLOOP                          ;LOOP IF SELECTED
     024132  104406                                                                            TRAP    C$CLP1
4050 024134  013701  026406                MOV     T29BFR+6,R1             ;PICK UP XSTO
4051 024140  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4052 024142  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4053 024146  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
4054 024150  001406                        BEQ     40$                     ;BR. IF EQUAL (OK)
4055 024152  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4059 024156                                ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     024156  104456                                                                            TRAP    C$ERHRD
     024160  000151                                                                            .WORD   105
     024162  027761                                                                            .WORD   T29BOT
     024164  016350                                                                            .WORD   EXPREC
4060 024166                          40$:  CKLOOP                          ;LOOP IF SELECTED
     024166  104406                                                                            TRAP    C$CLP1
4061 024170  013737  003076  026512        MOV     FREE,T29RB              ;ADDRESS OF READ BUFFER
4062 024176  012737  141011  026510        MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,CVC=1,ACK COMMAND
4063 024204  012704  026510                MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4064 024210  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4065 024214  004737  017124                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4066 024220  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4067 024224  012702  100206                MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
4068 024230  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4069 024232  001406                        BEQ     75$                     ;BR. IF OK
4070 024234  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4074 024240                                ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     024240  104456                                                                            TRAP    C$ERHRD
     024242  000152                                                                            .WORD   106
     024244  027632                                                                            .WORD   T29WDE
     024246  011700                                                                            .WORD   PKTSSR
4075 024250                          75$:  CKLOOP                          ;LOOP IF SELECTED
     024250  104406                                                                            TRAP    C$CLP1
4076 024252  013701  026406                MOV     T29BFR+6,R1             ;GET XSTO STATUS WORD
4077 024256  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4078 024260  052702  002000                BIS     #BIT10,R2               ;SET THE NEF BIT
4079 024264  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4080 024266  001406                        BEQ     170$                    ;BR. IF EQUAL (GOOD)
4081 024270  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4085 024274                                ERRHRD  ERRNO,T29NEF,EXPREC     ;NEF SHOULD BE SET
     024274  104456                                                                            TRAP    C$ERHRD
```

```
        024276  000153                                                                    .WORD   107
        024300  026700                                                                    .WORD   T29NEF
        024302  016350                                                                    .WORD   EXPREC
   4086 024304                          170$:
   4087 024304  005103                          COM     R3                  ;RESET THE SWITCH
   4088 024306  001273                          BNE     26$                 ;BR, IF FIRST TIME THROUGH HERE
   4089 024310                                  ENDSUB
        024310                                                                      L10037:
        024310  104403                                                                    TRAP    C$ESUB
```

```
                                        ;+
                                        ;
                                        ;TEST 1, SUBTEST 2
                                        ;
                                        ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE TAPE
                                        ;IS POSITIONED BEFORE THE FIRST RECORD ON TAPE (BUT NOT AT BOT) RESULTS IN
                                        ;TAPE STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS BIT
                                        ;SET.
                                        ;
                                        ;
                                        ;-
024312                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
024312                                                                                          T1.2:
024312  104402                                                                                          TRAP    C$BSUB
024314  004737  032140                          JSR     PC,T29REST              ;SET COMMAND PACKET
024320  004737  032232                          JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
024324  004737  032274                          JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
024330  004737  016650                          JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
024334  103407                                  BCS     20$                     ;BR IF INIT WAS OK
024336  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
024342  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
024344                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
024344  104455                                                                                          TRAP    C$ERDF
024346  000154                                                                                          .WORD   108
024350  003554                                                                                          .WORD   SFIERR
024352  011666                                                                                          .WORD   SFIMSG
024354                                  20$:
                                        ;
024354  012704  026360                          MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
024360  004737  010332                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
024364  103407                                  BCS     25$                     ;BR, IF COMMAND ISSUED OK
024366  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
024372  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
024374                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
024374  104456                                                                                          TRAP    C$ERHRD
024376  000155                                                                                          .WORD   109
024400  004760                                                                                          .WORD   WRTMSG
024402  011666                                                                                          .WORD   SFIMSG
024404                                  25$:    CKLOOP                          ;LOOP IF SELECTED
024404  104406                                                                                          TRAP    C$CLP1
024406  004737  010434                  26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
024412  016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR
024416  012702  000200                          MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
024422  103407                                  BCS     30$                     ;BR, IF NO PROBLEM
024424  010004                                  MOV     R0,R4                   ;PACKET ADDRESS SET UP
024426  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
024432                                          ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
024432  104456                                                                                          TRAP    C$ERHRD
024434  000156                                                                                          .WORD   110
024436  030270                                                                                          .WORD   T29RWN
024440  011700                                                                                          .WORD   PKTSSR
024442                                  30$:    CKLOOP                          ;LOOP IF SELECTED
024442  104406                                                                                          TRAP    C$CLP1
024444  013701  026406                          MOV     T29BFR+6,R1             ;PICK UP XSTO
024450  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
024452  052702  000002                          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
```

```
4141 024456  020102                          CMP     R1,R2                    ;DOES EXP - REC'D
4142 024460  001406                          BEQ     40$                      ;BR, IF EQUAL (OK)
4143 024462  004737  020106                  JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
4147 024466                                  ERRHRD  ERRNO,T29BOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
     024466  104456                                                                                TRAP    C$ERHRD
     024470  000157                                                                                .WORD   111
     024472  027761                                                                                .WORD   T29BOT
     024474  016350                                                                                .WORD   EXPREC
4148 024476  012737  000001  026512  40$:    MOV     #1,T29RB                 ;NUMBER OF RECORDS TO SPACE OVER
4149 024504  012737  000400  026516          MOV     #256..T29SZ              ;SET UP RECORD SIZE
4150 024512  012737  140005  026510          MOV     #140005,T29PK3           ;WRITE FORWARD,CVC-1,ACK COMMAND
4151 024520  012704  026510                  MOV     #T29PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
4152 024524  010465  177776                  MOV     R4,TSDB(R5)              ;ISSUE COMMAND
4153 024530  004737  017124                  JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
4154 024534  016501  000000                  MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
4155 024540  012702  000200                  MOV     #SSR,R2                  ;SET UP EXPECTED
4156 024544  020102                          CMP     R1,R2                    ;ARE THEY EQUAL
4157 024546  001406                          BEQ     75$                      ;BR, IF OK
4158 024550  004737  020106                  JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
4162                                                                          ;SOFT ERROR, DON'T CARE ABOUT WRITE
4163                                                                          ;COMMAND'S RESULTS - CHECKING WRITE
4164                                                                          ;TAPE MARK COMMAND
4165 024554                                  ERRSOFT ERRNO,T29WRT,PKTSSR      ;TSSR INCORRECT AFTER WRITE DATA
     024554  104457                                                                                TRAP    C$ERSOFT
     024556  000160                                                                                .WORD   112
     024560  027714                                                                                .WORD   T29WRT
     024562  011700                                                                                .WORD   PKTSSR
4166 024564                          75$:    CKLOOP                           ;LOOP IF SELECTED
     024564  104406                                                                                TRAP    C$CLP1
4167 024566  012737  000001  026512          MOV     #1,T29RB                 ;NUMBER OF RECORDS TO SPACE OVER
4168 024574  012737  140410  026510          MOV     #140410,T29PK3           ;SET UP COMMAND IN APCKET                    ;SET
UP SPACE REVERSE
4169 024602  012704  026510                  MOV     #T29PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
4170 024606  010465  177776                  MOV     R4,TSDB(R5)              ;ISSUE COMMAND
4171 024612  004737  017124                  JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
4172 024616  016501  000000                  MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
4173 024622  012702  000200                  MOV     #SSR,R2                  ;SET UP EXPECTED
4174 024626  020102                          CMP     R1,R2                    ;ARE THEY EQUAL
4175 024630  001406                          BEQ     175$                     ;BR, IF OK
4176 024632  004737  020106                  JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
4180 024636                                  ERRHRD  ERRNO,T29WDE,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
     024636  104456                                                                                TRAP    C$ERHRD
     024640  000161                                                                                .WORD   113
     024642  027632                                                                                .WORD   T29WDE
     024644  011700                                                                                .WORD   PKTSSR
4181 024646                          175$:   CKLOOP                           ;LOOP IF SELECTED
     024646  104406                                                                                TRAP    C$CLP1
4182 024650  013737  003076  026512          MOV     FREE,T29RB               ;ADDRESS OF BUFFER
4183 024656  012737  141011  026510          MOV     #141011,T29PK3           ;WRITE TAPE MARK RETRY,ACK,CVC-1 COMD.
4184 024664  012704  026510                  MOV     #T29PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
4185 024670  010465  177776                  MOV     R4,TSDB(R5)              ;ISSUE COMMAND
4186 024674  004737  017124                  JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
4187 024700  016501  000000                  MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
4188 024704  012702  100204                  MOV     #SSR!SC!BIT2,R2          ;SET UP EXPECTED
4189 024710  020102                          CMP     R1,R2                    ;ARE THEY EQUAL
4190 024712  001406                          BEQ     180$                     ;BR, IF OK
4191 024714  004737  020106                  JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
4195 024720                                  ERRHRD  ERRNO,T29WDE,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
```

```
        024720  104456                                                                    TRAP    C$ERHRD
        024722  000162                                                                    .WORD   114
        024724  027632                                                                    .WORD   T29WDE
        024726  011700                                                                    .WORD   PKTSSR
   4196 024730                          180$:   CKLOOP                          ;LOOP IF SELECTED
        024730  104406                                                                    TRAP    C$CLP1
   4197 024732  013701  026414                  MOV     T29BFR+14,R1            ;GET XST3 STATUS WORD
   4198 024736  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   4199 024740  052702  000001                  BIS     #BIT0,R2                ;SET THE RIB BIT
   4200 024744  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
   4201 024746  001406                          BEQ     190$                    ;BR, IF EQUAL (GOOD)
   4202 024750  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   4206 024754                                  ERRHRD  ERRNO,T29RIB,EXPREC     ;NEF SHOULD BE SET
        024754  104456                                                                    TRAP    C$ERHRD
        024756  000163                                                                    .WORD   115
        024760  031716                                                                    .WORD   T29RIB
        024762  016350                                                                    .WORD   EXPREC
   4207 024764                          190$:
   4208 024764                                  ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
        024764                                                                                  L10040:
        024764  104403                                                                    TRAP    C$ESUB
```

```
                                        ;+
                                        ;
                                        ;TEST 1, SUBTEST 3
                                        ;
                                        ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND TERMINATES
                                        ;PROPERLY AND WRITES THE TAPE MARK ONTO TAPE (BY ISSUING A READ REVERSE
                                        ;COMMAND AND CHECKING FOR TAPE STATUS ALERT TERMINATION AND TMK=1).
                                        ;
                                        ;-
024766                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
024766                                                                                          T1.3:
024766  104402                                                                                          TRAP    C$BSUB
024770  004737  032140                          JSR     PC,T29REST              ;SET COMMAND PACKET
024774  004737  032232                          JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
025000  004737  032274                          JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
025004  012737  023420  026550                  MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
025012  004737  016650                  10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
025016  103426                                  BCS     20$                     ;BR IF INIT WAS OK
025020                                          DELAY   250                     ;DELAY ABOUT .25 SECONDS
025020  012727  000250                                                                          MOV     #250,(PC)+
025024  000000                                                                                  .WORD   0
025026  013727  002116                                                                          MOV     L$DLY,(PC)+
025032  000000                                                                                  .WORD   0
025034  005367  177772                                                                          DEC     -6(PC)
025040  001375                                                                                  BNE     .-4
025042  005367  177756                                                                          DEC     -22(PC)
025046  001367                                                                                  BNE     .-20
025050  005337  026550                          DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
025054  001356                                  BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
025056  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
025062  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
025064                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
025064  104455                                                                                  TRAP    C$ERDF
025066  000164                                                                                  .WORD   116
025070  003554                                                                                  .WORD   SFIERR
025072  011666                                                                                  .WORD   SFIMSG
025074                                  20$:
025074  012704  026360                          MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
025100  004737  010332                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
025104  103407                                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
025106  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
025112  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
025114                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
025114  104456                                                                                  TRAP    C$ERHRD
025116  000165                                                                                  .WORD   117
025120  004760                                                                                  .WORD   WRTMSG
025122  011666                                                                                  .WORD   SFIMSG
025124                                  23$:    CKLOOP                          ;LOOP IF SELECTED
025124  104406                                                                                  TRAP    C$CLP1
025126  004737  010434                          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
025132  103411                                  BCS     30$                     ;BR, IF NO PROBLEM
025134  016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR
025140  010004                                  MOV     R0,R4                   ;SAVE PACKET ADDRESS
025142  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
025146                                          ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
025146  104456                                                                                  TRAP    C$ERHRD
025150  000166                                                                                  .WORD   118
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     025152  030270                                                                    .WORD   T29RWN
     025154  011700                                                                    .WORD   PKTSSR
4255 025156                          30$:   CKLOOP                          ;LOOP IF SELECTED
     025156  104406                                                                    TRAP    C$CLP1
4256 025160  013701  026406                 MOV     T29BFR+6,R1             ;PICK UP XSTO
4257 025164  010102                         MOV     R1,R2                   ;SET UP EXPECTED
4258 025166  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4259 025172  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
4260 025174  001406                         BEQ     40$                     ;BR, IF EQUAL (OK)
4261 025176  004737  020106                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4265 025202                                 ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     025202  104456                                                                    TRAP    C$ERHRD
     025204  000167                                                                    .WORD   119
     025206  027761                                                                    .WORD   T29BOT
     025210  016350                                                                    .WORD   EXPREC
4266 025212                          40$:   CKLOOP                          ;LOOP IF SELECTED
     025212  104406                                                                    TRAP    C$CLP1
4267 025214  012737  140011  026510         MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4268 025222  012704  026510                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4269 025226  010465  177776                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4270 025232  004737  017124                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4271 025236  016501  000000                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4272 025242  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
4273 025246  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
4274 025250  001406                         BEQ     70$                     ;BR, IF OK
4275 025252  004737  020106                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4279 025256                                 ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
     025256  104456                                                                    TRAP    C$ERHRD
     025260  000170                                                                    .WORD   120
     025262  030607                                                                    .WORD   T29WDC
     025264  011700                                                                    .WORD   PKTSSR
4280 025266                          70$:   CKLOOP                          ;LOOP IF SELECTED
     025266  104406                                                                    TRAP    C$CLP1
4281 025270  012703  000001          150$:  MOV     #1.,R3                  ;NUMBER OF RECORDS TO WRITE TM
4282 025274  012737  141011  026510         MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
4283 025302  012704  026510                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4284 025306  010465  177776          155$:  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4285 025312  004737  017124                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4286 025316  016501  000000                 MOV     TSSR(R5),R1             ;PICK UP TSSR
4287 025322  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4288 025326  020102                         CMP     R1,R2                   ;WAS STATUS GOOD
4289 025330  001406                         BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
4290 025332  004737  020106                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4294 025336                                 ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     025336  104456                                                                    TRAP    C$ERHRD
     025340  000171                                                                    .WORD   121
     025342  030607                                                                    .WORD   T29WDC
     025344  011700                                                                    .WORD   PKTSSR
4295 025346                          165$:  CKLOOP                          ;LOOP IF SELECTED
     025346  104406                                                                    TRAP    C$CLP1
4296 025350  012737  140401  026510         MOV     #140401,T29PK3          ;READ REVERSE,ACK, COMMAND
4297 025356  013737  003076  026512         MOV     FREE,T29RB              ;NUMBER OF RECORDS TO SPACE BACK
4298 025364  012704  026510                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4299 025370  010465  177776                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4300 025374  004737  017124                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4301 025400  016501  000000                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4302 025404  012702  100204                 MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
```

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4303 025410  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4304 025412  001406                        BEQ     222$                    ;BR, IF OK
4305 025414  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4309 025420                                ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
     025420  104456                                                                                TRAP    C$ERHRD
     025422  000172                                                                                .WORD   122
     025424  031553                                                                                .WORD   T29RDG
     025426  011700                                                                                .WORD   PKTSSR
4310 025430                         222$:  CKLOOP                          ;LOOP IF SELECTED
     025430  104406                                                                                TRAP    C$CLP1
4311 025432  013701  026406                MOV     T29BFR+6,R1             ;PICK UP XSTO
4312 025436  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4313 025440  052702  100000                BIS     #BIT15,R2               ;TMK SHOULD BE SET
4314 025444  020102                        CMP     R1,R2                   ;IS TMK SET
4315 025446  001406                        BEQ     226$                    ;BR, IF TMK WAS SET (GOOD)
4316 025450  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4320 025454                                ERRHRD  ERRNO,T29RRN,EXPREC     ;TMK NOT SET AFTER READ REV
     025454  104456                                                                                TRAP    C$ERHRD
     025456  000173                                                                                .WORD   123
     025460  032016                                                                                .WORD   T29RRN
     025462  016350                                                                                .WORD   EXPREC
4321 025464                         226$:  CKLOOP                          ;LOOP IF SELECTED
     025464  104406                                                                                TRAP    C$CLP1
4322 025466                                ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     025466                                                                          L10041:
     025466  104403                                                                                TRAP    C$ESUB
```

```
                                        ;+
                                        ;
                                        ;TEST 1, SUBTEST 4
                                        ;
                                        ;VERIFIES THAT THE SPACE-REVERSE PORTION OF THE WRITE TAPE MARK
                                        ;RETRY OPERATION IS PERFORMED BY REWINDING THE TAPE, ISSUING SEVERAL
                                        ;WRITE TAPE MARK RETRY COMMANDS IN SUCCESSION, THEN ISSUING TWO SPACE
                                        ;RECORDS REVERSE COMMANDS IN SUCCESSION.  THE SECOND SPACE RECORDS REVERSE
                                        ;COMMAND SHOULD TERMINATE WITH REVERSE INTO BOT (RIB) STATUS SET.
                                        ;
                                        ;-
025470                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
025470                                                                                          T1.4:
025470  104402                                                                                          TRAP    C$BSUB
025472  004737  032140                          JSR     PC,T29REST              ;SET COMMAND PACKET
025476  004737  032232                          JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
025502  004737  032274                          JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
025506  012737  023420  026550                  MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
025514  004737  016650                  10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
025520  103426                                  BCS     20$                     ;BR IF INIT WAS OK
025522                                          DELAY   250                     ;DELAY ABOUT .25 SECONDS
025522  012727  000250                                                                          MOV     #250,(PC)+
025526  000000                                                                                  .WORD   0
025530  013727  002116                                                                          MOV     L$DLY,(PC)+
025534  000000                                                                                  .WORD   0
025536  005367  177772                                                                          DEC     -6(PC)
025542  001375                                                                                  BNE     .-4
025544  005367  177756                                                                          DEC     -22(PC)
025550  001367                                                                                  BNE     .-20
025552  005337  026550                          DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
025556  001356                                  BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
025560  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
025564  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
025566                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
025566  104455                                                                                  TRAP    C$ERDF
025570  000174                                                                                  .WORD   124
025572  003554                                                                                  .WORD   SFIERR
025574  011666                                                                                  .WORD   SFIMSG
025576                                  20$:
025576  012704  026360                          MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
025602  004737  010332                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
025606  103407                                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
025610  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
025614  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
025616                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
025616  104456                                                                                  TRAP    C$ERHRD
025620  000175                                                                                  .WORD   125
025622  004760                                                                                  .WORD   WRTMSG
025624  011666                                                                                  .WORD   SFIMSG
025626                                  23$:    CKLOOP                          ;LOOP IF SELECTED
025626  104406                                                                                  TRAP    C$CLP1
025630  004737  010434                          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
025634  103411                                  BCS     30$                     ;BR, IF NO PROBLEM
025636  016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR
025642  010004                                  MOV     R0,R4                   ;SAVE PACKET ADDRESS
025644  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
025650                                          ERRHRD  ERRNO,T29RWN,FKTSSR     ;REWIND NOT ACCEPTED
```

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        025650  104456                                                                    TRAP    C$ERHRD
        025652  000176                                                                    .WORD   126
        025654  030270                                                                    .WORD   T29RWN
        025656  011700                                                                    .WORD   PKTSSR
   4371 025660                          30$:    CKLOOP                          ;LOOP IF SELECTED
        025660  104406                                                                    TRAP    C$CLP1
   4372 025662  013701  026406                  MOV     T29BFR+6,R1             ;PICK UP XSTO
   4373 025666  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   4374 025670  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
   4375 025674  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
   4376 025676  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
   4377 025700  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   4381 025704                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        025704  104456                                                                    TRAP    C$ERHRD
        025706  000177                                                                    .WORD   127
        025710  027761                                                                    .WORD   T29BOT
        025712  016350                                                                    .WORD   EXPREC
   4382 025714                          40$:    CKLOOP                          ;LOOP IF SELECTED
        025714  104406                                                                    TRAP    C$CLP1
   4383 025716  012737  140011  026510          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
   4384 025724  012704  026510                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   4385 025730  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   4386 025734  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   4387 025740  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   4388 025744  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
   4389 025750  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
   4390 025752  001406                          BEQ     70$                     ;BR, IF OK
   4391 025754  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   4395 025760                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
        025760  104456                                                                    TRAP    C$ERHRD
        025762  000200                                                                    .WORD   128
        025764  030607                                                                    .WORD   T29WDC
        025766  011700                                                                    .WORD   PKTSSR
   4396 025770                          70$:    CKLOOP                          ;LOOP IF SELECTED
        025770  104406                                                                    TRAP    C$CLP1
   4397 025772  012703  000012          150$:   MOV     #10.,R3                 ;NUMBER OF RECORDS TO WRITE TM
   4398 025776  012737  000001  026512          MOV     #1,T29RB                ;SET UP PACKET
   4399 026004  012737  141011  026510          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
   4400 026012  012704  026510                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   4401 026016  010465  177776          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   4402 026022  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   4403 026026  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
   4404 026032  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
   4405 026036  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
   4406 026040  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
   4407 026042  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   4411 026046                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
        026046  104456                                                                    TRAP    C$ERHRD
        026050  000201                                                                    .WORD   129
        026052  030607                                                                    .WORD   T29WDC
        026054  011700                                                                    .WORD   PKTSSR
   4412 026056                          165$:   CKLOOP                          ;LOOP IF SELECTED
        026056  104406                                                                    TRAP    C$CLP1
   4413 026060  005303                          DEC     R3                      ;BUMP COUNTER DOWN
   4414 026062  001355                          BNE     155$                    ;BR, IF LESS THAN 10 TAPE MARKS
   4415 026064  012737  140410  026510          MOV     #140410,T29PK3          ;SPACE REVERSE,ACK,CVC=1, COMMAND
   4416 026072  012737  000001  026512          MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
```

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4417 026100  012704  026510                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4418 026104  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4419 026110  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4420 026114  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4421 026120  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
4422 026124  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4423 026126  001406                          BEQ     222$                    ;BR, IF OK
4424 026130  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4428 026134                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
     026134  104456                                                                                  TRAP    C$ERHRD
     026136  000202                                                                                  .WORD   130
     026140  027632                                                                                  .WORD   T29WDE
     026142  011700                                                                                  .WORD   PKTSSR
4429 026144                          222$:   CKLOOP                          ;LOOP IF SELECTED
     026144  104406                                                                                  TRAP    C$CLP1
4430 026146  012737  100410  026510          MOV     #100410,T29PK3          ;SPACE REVERSE,ACK, COMMAND
4431 026154  012737  000005  026512          MOV     #5,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
4432 026162  012704  026510                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4433 026166  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4434 026172  012737  000310  026550          MOV     #200.,T29DLY            ;NEED DELAY
4435 026200  004737  017124          230$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4436 026204  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4437 026210  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
4438 026214  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4439 026216  001425                          BEQ     260$                    ;BR, IF OK
4440 026220                                  DELAY   250                     ;DELAY ABOUT .25 SECONDS
     026220  012727  000250                                                                          MOV     #250,(PC)+
     026224  000000                                                                                  .WORD   0
     026226  013727  002116                                                                          MOV     L$DLY,(PC)+
     026232  000000                                                                                  .WORD   0
     026234  005367  177772                                                                          DEC     -6(PC)
     026240  001375                                                                                  BNE     .-4
     026242  005367  177756                                                                          DEC     -22(PC)
     026246  001367                                                                                  BNE     .-20
4441 026250  005337  026550                  DEC     T29DLY                  ;LOOP ROUTINE
4442 026254  001351                          BNE     230$                    ;LOOP BACK IF NOT ENOUGH DELAY
4443 026256  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4447 026262                                  ERRHRD  ERRNO,T29SDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE REV CMD.
     026262  104456                                                                                  TRAP    C$ERHRD
     026264  000203                                                                                  .WORD   131
     026266  031634                                                                                  .WORD   T29SDG
     026270  011700                                                                                  .WORD   PKTSSR
4448 026272                          260$:   CKLOOP                          ;LOOP IF SELECTED
     026272  104406                                                                                  TRAP    C$CLP1
4449 026274  013701  026414                  MOV     T29BFR+14,R1            ;PICK UP XST3
4450 026300  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4451 026302  052702  000001                  BIS     #BIT0,R2                ;RIB SHOULD BE SET
4452 026306  020102                          CMP     R1,R2                   ;IS RIB SET
4453 026310  001406                          BEQ     270$                    ;BR, IF RIB WAS SET (GOOD)
4454 026312  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4458 026316                                  ERRHRD  ERRNO,T29RIB,EXPREC     ;TMK NOT SET AFTER READ REV
     026316  104456                                                                                  TRAP    C$ERHRD
     026320  000204                                                                                  .WORD   132
     026322  031716                                                                                  .WORD   T29RIB
     026324  016350                                                                                  .WORD   EXPREC
4459 026326                          270$:   CKLOOP                          ;LOOP IF SELECTED
     026326  104406                                                                                  TRAP    C$CLP1
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 4460 026330                          330$:   CKLOOP                          ;LOOP IF SELECTED
      026330  104406                                                                          TRAP    C$CLP1
 4461 026332                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
      026332                                                                                L10042:
      026332  104403                                                                          TRAP    C$ESUB
 4462
 4463                                 ;
 4464                                 ;
 4465                                 ;
 4466 026334  004737  017362                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 4467 026340  103002                          BCC     163$                    ;BR, IF NO LOOP REQUIRED
 4468 026342  000137  023704                  JMP     T29LOOP                 ;EXECUTE AGAIN
 4469 026346                          163$:   EXIT    TST                     ;ALL DONE THIS TEST
      026346  104432                                                                          TRAP    C$EXIT
      026350  003754                                                                          .WORD   L10036-.
```

```
                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
026352                                  .BLKB   10-<.-TUV2A&7>
026360                          T29PACKET:                              ;COMMAND PACKET FOR TEST
026360  014004                          .WORD   14004                   ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
026362  026370                          .WORD   T29DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
026364  000000                          .WORD   0
026366  000012                          .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
026370                          T29DATA:                                ;CHARACTERISTICS DATA BLOCK
026370  026400                          .WORD   T29BFR                  ;ADDRESS OF MESSAGE BUFFER
026372  000000                          .WORD   0
026374  000024                          .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
026376  000000                          .WORD   0
026400                          T29BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
026462                                  .BLKB   10-<.-TUV2A&7>
026470                          T29PK2:
026470  100006                          .WORD   100006                  ;WRITE SUB SYS MEM COMMAND, AND ACK
026472  026520                          .WORD   T29BF2                  ;ADDRESS OF SELECT BLOCK DATA
026474  000000                          .WORD   0
026476  000006                          .WORD   6.                      ;SIZE OF DATA PACKET
026500                                  .BLKB   10-<.-TUV2A&7>
026510                          T29PK3:
026510  140005                          .WORD   140005                  ;WRITE TAPE MARK RETRY COMMAND, CVC=1 AND ACK
026512                          T29RB:
026512  003076                  T29WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
026514  000000                          .WORD   0
026516  000000                  T29SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                        .EVEN
                                ;
026520                          T29BF2:
026520     010                  T29BS0: .BYTE   10                      ;BSEL0 AREA
026521     200                  T29BS1: .BYTE   200                     ;BSEL1 AREA
026522  000000                  T29S2:  .WORD   0                       ;SEL 2 AREA
026524  000000                  T29S3:  .WORD   0                       ;DATA AREA
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

026526  140001                  T29RN:  .WORD   140001                  ;READ DATA
026530  140401                  T29WDR: .WORD   140401                  ;READ DATA REVERSE
026532  141001                  T29CON: .WORD   141001                  ;READ PREVIOUS OPP=0
026534  161001                          .WORD   161001                  ;READ PREVIOUS OPP=1
026536  141401                          .WORD   141401                  ;WRITE TAPE MARK RETRY NEXT OPP=0
026540  161401                          .WORD   161401                  ;WRITE TAPE MARK RETRY NEXT OPP=1
026542  177777                          .WORD   177777                  ;END OF DATA
                                ;
026544  000000                  T29CNT: .WORD   0                       ;TAPE RECORD COUNTER STORAGE AREA

026546  000000                  T29RSZ: .WORD   0                       ;RECORD STORAGE SIZE  AREA
026550  000000                  T29DLY: .WORD                   ;DELAY COUNTER STORAGE AREA
```

```
                                        ;+
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-

026552    104    162    151    T29OFL: .ASCIZ  'Drive is OFFLINE'
026573    124    141    160    T29WNG: .ASCIZ  'Tape Position Incorrect After WRITE TAPE MARK RETRY Previous (OPP=1)'
026700    127    122    111    T29NEF: .ASCIZ  'WRITE TAPE MARK RETRY, At BOT, Failed To Set NEF (XSTO)'
026770    124    123    123    T29RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
027037    127    122    111    T29RRF: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Space Reverse, Read Forward) Command Failed
'
027153    127    122    111    T29RRG: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Read Forward, Space Reverse) Command Failed
'
027267    120    117    123    T29SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
027351    122    111    102    T29LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
027421    124    123    123    T29WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
027476    111    154    154    T29LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
027557    127    122    111    T29SSR: .ASCIZ  'WRITE TAPE MARK RETRY COMMAND Not Accepted'
027632    124    123    123    T29WDE: .ASCIZ  'TSSR Not Correct After SPACE REVERSE DATA Command'

027714    124    123    123    T29WRT: .ASCIZ  'TSSR Not Correct After WRITE Command'
027761    124    141    160    T29BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
030026    104    141    164    T29DTA: .ASCIZ  'Data Written To Tape Not Equal To Data Read From Tape'
030114    127    122    111    T29EOT: .ASCIZ  'WRITE TAPE MARK RETRY DATA OVER EOT GAVE NO TAPE STATUS ALERT'
030212    124    123    123    T29TM:  .ASCIZ  'TSSR Not Correct After SPACE REVERSE Into BOT'
030270    122    145    167    T29RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
030337    122    101    115    T29RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Rem'
030412    124    123    123    T29AMS: .ASCIZ  'TSSR Init. Failed After WRITE TAPE MARK RETRY COMMAND'
030500    124    123    123    T29WDD: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command, SWB Bit Set'
030607    124    123    123    T29WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command'
030701    103    126    103    T29VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
030754    124    123    102    T29BA:  .ASCIZ  'TSBA Not Correct After WRITE TAPE MARK RETRY DATA Command'
031046    127    122    111    T29WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
031135    122    145    141    T29LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
031217    122    145    141    T29LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
031301    122    145    163    T29PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
031367    122    145    141    T29TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
031455    104    141    164    T29NEQ: .ASCIZ  'Data WRITE TAPE MARK RETRY From Tape Not Correct, After SWB=1'
031553    124    123    123    T29RDG: .ASCIZ  'TSSR Incorrect After READ REVERSE Into Tape Mark'
031634    124    123    123    T29SDG: .ASCIZ  'TSSR Incorrect After SPACE REVERSE Into Tape Mark'
031716    127    122    111    T29RIB: .ASCIZ  'WRITE TAPE MARK RETRY At First Record, Failed To Set RIB (XST3)'
032016    124    115    113    T29RRN: .ASCIZ  'TMK (XSTO) Failed To Set After READ REVERSE Into Tape Mark'
032111    127    162    151    TST29ID:        .ASCIZ  'Write Tape Mark Retry'
                                        .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

032140                                  T29REST:
032140                                          SAVREG                          ;SAVE THE REGISTERS
032144  012701  026360                          MOV     #T29PACKET,R1           ;START OF THE PACKET
032150  012721  140004                          MOV     #140004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK. CVC=1
032154  012721  026370                          MOV     #T29DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
032160  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
032162  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
```

```
032166  012721  026400                  MOV     #T29BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
032172  005021                          CLR     (R1)+
032174  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
032200  005021                          CLR     (R1)+
032202  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO (0)
032206  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
032212  012762  177777  026400  64$:    MOV     #177777,T29BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
032220  005742                          TST     -(R2)                   ;NEXT LOCATION
032222  020227  000000                  CMP     R2,#0                   ;CHECK FOR END OF LOOP
032226  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
032230  000207                          RTS     PC                      ;RETURN


032232                          T29RT2:
032232                                  SAVREG                          ;SAVE THE REGISTERS
032236  012701  026470                  MOV     #T29PK2,R1              ;START OF THE PACKET
032242  012721  140006                  MOV     #140006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1,
032246  012721  026520                  MOV     #T29BF2,(R1)+           ;ADDRESS OF DATA BLOCK
032252  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
032254  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
032260  005021                          CLR     (R1)+
032262  012701  026520                  MOV     #T29BF2,R1              ;POINT TO DATA SEL AREA
032266  005021                          CLR     (R1)+
032270  005011                          CLR     (R1)
032272  000207                          RTS     PC                      ;RETURN
032274                          T29RT3:
032274                                  SAVREG                          ;SAVE THE REGISTERS
032300  012701  026510                  MOV     #T29PK3,R1              ;START OF THE PACKET
032304  012721  000000                  MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK,
032310  012721  000000                  MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
032314  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
032316  012711  000000                  MOV     #0,(R1)         ;SIZE OF DATA BLOCK IN BYTES
032322  000207                          RTS     PC                      ;RETURN
032324                                  ENDTST
032324                                                                          L10036:
032324  104401                                                                          TRAP    C$ETST
```

```
                                        .SBTTL  TEST  2: SKIP TAPE MARKS
                                ;*
                                ;
                                ;THIS TEST VERIFIES PROPER OPERATION OF THE SKIP TAPE MARKS
                                ;FORWARD AND SKIP TAPE MARKS REVERSE COMMANDS. PROPER OPERATION
                                ;UNDER CONTROL OF ALL COMBINATIONS OF THE ENABLE SKIP TAPE MARKS
                                ;STOP (ESS) AND ENABLE TAPE MARKS STOP OFF BOT (ENB) BITS SPECIFIED
                                ;BY THE WRITE CHARACTERISTICS COMMAND. THE TEST CONSISTS OF THE
                                ;FOLLOWING SUBTESTS (FOR EACH SUBTEST, THE TAPE IS FIRST WRITTEN
                                ;WITH AN APPROPRIATE SERIES OF DATA RECORDS AND/OR TAPE MARKS
                                ;AND/OR DOUBLE TAPE MARKS.
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 11 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
032326                                  BGNTST
032326                                                                          T2::
032326  005037  002172                  CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
032332  005037  003104                  CLR     KTFLG           ;HOLD OFF KT11
032336  012737  005676  002150          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
032344  012700  041121                  MOV     #TST30ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
032350  004737  017414                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
032354  012737  000001  002166          MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
                                ;*
                                ;
                                ;TEST 2, SUBTEST 1
                                ;
                                ;
                                ;VERIFIES THAT A SKIP TAPE MARKS FORWARD COMMAND WITH
                                ;A TAPE MARK COUNT OF 1 OPERATES OPERATES PROPERLY. THE TAPE
                                ;IS FIRST REWOUND, THEN WRITTEN WITH SEVERAL "FILES";
                                ;EACH FILE CONSISTS OF A NUMBER OF DATA RECORDS
                                ;FOLLOWED BY A TAPE MARK. THE FINAL FILE IS
                                ;TERMINATED BY A DOUBLE TAPE MARK. EACH DATA RECORD
                                ;CONTAINS A FILE NUMBER AND THE RECORD NUMBER WITHIN
                                ;THE FILE SO THAT TAPE POSITION CAN BE SUBSEQUENTLY
                                ;VERIFIED BY READING THE DATA. THE TAPE IS AGAIN
                                ;REWOUND AND A SERIES OF SKIP TAPE MARKS FORWARD
                                ;COMMANDS ARE ISSUED AND THE RESULTS (TAPE STATUS ALERT
                                ;TERMINATION, TMK=1 STATUS, TAPE POSITION VIA READ
                                ;COMMAND) IS CHECKED. PRIOR TO ISSUANCE OF EACH SKIP
                                ;COMMAND, A WRITE CHARACTERISTICS COMMAND IS ISSUED TO
                                ;SET UP THE ESS AND ENB CONTROL BITS. ALL
                                ;COMBINATIONS OF ESS AND ENB ARE USED (00,01,10,
                                ;11); OPERATION SHOULD BE THE SAME IN EACH CASE FOR
                                ;THIS SUBTEST.
                                ;
                                ;
                                ;-

032362                          T30LOOP:
032362                                  BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
032362                                                                          T2.1:
032362  104402                                                                          TRAP    C$BSUB
```

```
032364  004737  041142                  JSR     PC,T30REST              ;SET COMMAND PACKET
032370  005037  036544                  CLR     T30FCN                  ;CLEAR FILE COUNTER
032374  004737  041234                  JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
032400  004737  041276                  JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
032404  012737  176750  036546          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
032412  004737  016650          10$:    JSR     PC,S0FINIT              ;DO INITIALIZE ON CONTROLLER
032416  103426                          BCS     20$                     ;BR IF INIT WAS OK
032420                                  DELAY   250                     ;DELAY ROUTINE CALL
032420  012727  000250                                                                  MOV     #250,(PC)+
032424  000000                                                                          .WORD   0
032426  013727  002116                                                                  MOV     L$DLY,(PC)+
032432  000000                                                                          .WORD   0
032434  005367  177772                                                                  DEC     -6(PC)
032440  001375                                                                          BNE     .-4
032442  005367  177756                                                                  DEC     -22(PC)
032446  001367                                                                          BNE     .-20
032450  005337  036546                  DEC     T30DLY                  ;BUMP COUNTER
032454  001356                          BNE     10$                     ;BR, IF MORE COUNTING TO DO
032456  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
032462  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
032464                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
032464  104455                                                                          TRAP    C$ERDF
032466  000311                                                                          .WORD   201
032470  003554                                                                          .WORD   SFIERR
032472  011666                                                                          .WORD   SFIMSG
032474                          20$:
032474  012704  036360                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                ;*******************************************************
;SET                             ;
                                ;ISSUE WRITE CHARACTERISTICS COMMAND
                                ;
                                ;*******************************************************
032500  004737  010332                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
032504  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
032506  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
032512  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
032514                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
032514  104456                                                                          TRAP    C$ERHRD
032516  000312                                                                          .WORD   202
032520  004760                                                                          .WORD   WRTMSG
032522  011666                                                                          .WORD   SFIMSG
032524                          23$:    CKLOOP                          ;LOOP IF SELECTED
032524  104406                                                                          TRAP    C$CLP1
                                ;*******************************************************
                                ;
                                ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
                                ;
                                ;*******************************************************
032526  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
032532  103411                          BCS     30$                     ;BR, IF NO PROBLEM
032534  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
032536  016501  000000                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
```

```
4728 032542  004737  020106                JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
4732 032546                                ERRHRD  ERRNO,T30RWN,PKTSSR    ;REWIND NOT ACCEPTED
     032546  104456                                                                          TRAP    C$ERHRD
     032550  000313                                                                          .WORD   203
     032552  040130                                                                          .WORD   T30RWN
     032554  011700                                                                          .WORD   PKTSSR
4733 032556                         30$:   CKLOOP                         ;LOOP IF SELECTED
     032556  104406                                                                          TRAP    C$CLP1
4734
4735                                ;*************************************************************
4736                                ;
4737                                ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
4738                                ;
4739                                ;*************************************************************
4740
4741 032560  013701  036406                MOV     T30BFR+6,R1            ;PICK UP XSTO
4742 032564  010102                        MOV     R1,R2                  ;SET UP EXPECTED
4743 032566  052702  000002                BIS     #BIT1,R2               ;SET BOT BIT IN EXPECTED
4744 032572  020102                        CMP     R1,R2                  ;DOES EXP = REC'D
4745 032574  001406                        BEQ     40$                    ;BR, IF EQUAL (OK)
4746 032576  004737  020106                JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
4750 032602                                ERRHRD  ERRNO,T30BOT,EXPREC    ;TAPE NOT AT BOT AFTER REWIND
     032602  104456                                                                          TRAP    C$ERHRD
     032604  000314                                                                          .WORD   204
     032606  037731                                                                          .WORD   T30BOT
     032610  016350                                                                          .WORD   EXPREC
4751 032612                         40$:   CKLOOP                         ;LOOP IF SELECTED
     032612  104406                                                                          TRAP    C$CLP1
4752 032614  012737  000001  036544        MOV     #1.,T30FCN             ;SET "FILE" COUNTER AT 1 DECIMAL
4753 032622  012703  000001         64$:   MOV     #1,R3                  ;ONE RECORD  PER "FILE"
4754 032626  013737  003076  036512 65$:   MOV     FREE,T30WB             ;SET UP PACKETS'S WRITE BUFFER
4755 032634  012737  003720  036516        MOV     #2000.,T30SZ           ;SET RECORD SIZE AT 2000 BYTES
4756
4757                                ;*************************************************************
4758                                ;
4759                                ;WRITE DATA,ACK,CVC=1 COMMAND
4760                                ;
4761                                ;*************************************************************
4762
4763 032642  012737  140005  036510        MOV     #140005,T30PK3         ;WRITE DATA,ACK,CVC=1 COMMAND
4764 032650  012704  036510                MOV     #T30PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
4765 032654  013702  036544                MOV     T30FCN,R2              ;GET FILE COUNTER
4766 032660  000302                        SWAB    R2                     ;MOVE TO UPPER BYTE
4767 032662  010301                        MOV     R3,R1                  ;GET RECORD COUNTER
4768 032664  060201                        ADD     R2,R1                  ;FILE COUNTER IN UPPER, RECORD # LOW
4769 032666  010177  150204                MOV     R1,@FREE               ;MOV TO OUT PUT BUFFER
4770 032672  010465  177776                MOV     R4,TSDB(R5)            ;ISSUE COMMAND
4771 032676  004737  017124                JSR     PC,WAITF               ;WAIT FOR SSR TO SET
4772 032702  016501  000000                MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
4773 032706  012702  000200                MOV     #SSR,R2                ;SET UP EXPECTED
4774 032712  020102                        CMP     R1,R2                  ;ARE THEY EQUAL
4775 032714  001406                        BEQ     70$                    ;BR, IF OK
4776 032716  004737  020106                JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
4780                                                                      ;SOFT ERROR, DON'T CARE ABOUT WRITE
4781                                                                      ;COMMAND'S RESULTS - CHECKING SKIP
4782                                                                      ;TAPE MARK COMMAND
4783 032722                                ERRSOFT ERRNO,T30WDD,PKTSSR    ;TSSR INCORRECT AFTER WRITE DATA
```

```
        032722  104457                                                                    TRAP    C$ERSOFT
        032724  000315                                                                    .WORD   205
        032726  037060                                                                    .WORD   T30WDD
        032730  011700                                                                    .WORD   PKTSSR
   4784 032732                          70$:    CKLOOP                          ;LOOP IF SELECTED
        032732  104406                                                                    TRAP    C$CLP1
   4785 032734  005203                          INC     R3                      ;COUNT THE RECORD COUNTER DOWN
   4786 032736  020327  000021                  CMP     R3,#21                  ;AT 20 YET
   4787 032742  001331                          BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
   4788
   4789                                 ;*****************************************************
   4790                                 ;
   4791                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
   4792                                 ;
   4793                                 ;*****************************************************
   4794
   4795 032744  012737  141011  036510          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
   4796 032752  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   4797 032756  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   4798 032762  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   4799 032766  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
   4800 032772  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
   4801 032776  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
   4802 033000  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
   4803 033002  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   4807 033006                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
        033006  104456                                                                    TRAP    C$ERHRD
        033010  000316                                                                    .WORD   206
        033012  040252                                                                    .WORD   T30WDC
        033014  011700                                                                    .WORD   PKTSSR
   4808 033016                          160$:   CKLOOP                          ;LOOP IF SELECTED
        033016  104406                                                                    TRAP    C$CLP1
   4809 033020  005237  036544                  INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
   4810 033024  023727  036544  000006          CMP     T30FCN,#6               ;WRITE 5 FILE TO TAPE
   4811 033032  001273                          BNE     64$                     ;BR, IF NOT AT 5 FILES WRITTEN
   4812
   4813                                 ;*****************************************************
   4814                                 ;
   4815                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
   4816                                 ;
   4817                                 ;*****************************************************
   4818
   4819 033034  012737  141011  036510          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
   4820 033042  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   4821 033046  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   4822 033052  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   4823 033056  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
   4824 033062  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
   4825 033066  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
   4826 033070  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
   4827 033072  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   4831 033076                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
        033076  104456                                                                    TRAP    C$ERHRD
        033100  000317                                                                    .WORD   207
        033102  040252                                                                    .WORD   T30WDC
        033104  011700                                                                    .WORD   PKTSSR
   4832 033106                          165$:   CKLOOP                          ;LOOP IF SELECTED
```

```
     033106  104406                                                                    TRAP    C$CLP1
4833
4834                                ;*********************************************************
4835                                ;
4836                                ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
4837                                ;
4838                                ;*********************************************************
4839
4840 033110  004737  010434                JSR     PC,REWIND                ;CALL TAPE REWIND COMMAND
4841 033114  103411                        BCS     170$                     ;BR, IF NO PROBLEM
4842 033116  010004                        MOV     R0,R4                    ;GET PACKET ADDRESS
4843 033120  016501  000000                MOV     TSSR(R5),R1              ;GET STATUS REGISTER
4844 033124  004737  020106                JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
4848 033130                                ERRHRD  ERRNO,T30RWN,PKTSSR      ;REWIND NOT ACCEPTED
     033130  104456                                                                    TRAP    C$ERHRD
     033132  000320                                                                    .WORD   208
     033134  040130                                                                    .WORD   T30RWN
     033136  011700                                                                    .WORD   PKTSSR
4849 033140                         170$:  CKLOOP                           ;LOOP IF SELECTED
     033140  104406                                                                    TRAP    C$CLP1
4850
4851                                ;*********************************************************
4852                                ;
4853                                ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
4854                                ;
4855                                ;*********************************************************
4856
4857 033142  013701  036406                MOV     T30BFR+6,R1              ;PICK UP XSTO
4858 033146  010102                        MOV     R1,R2                    ;SET UP EXPECTED
4859 033150  052702  000002                BIS     #BIT1,R2                 ;SET BOT BIT IN EXPECTED
4860 033154  020102                        CMP     R1,R2                    ;DOES EXP = REC'D
4861 033156  001406                        BEQ     180$                     ;BR, IF EQUAL (OK)
4862 033160  004737  020106                JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
4866 033164                                ERRHRD  ERRNO,T30BOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
     033164  104456                                                                    TRAP    C$ERHRD
     033166  000321                                                                    .WORD   209
     033170  037731                                                                    .WORD   T30BOT
     033172  016350                                                                    .WORD   EXPREC
4867 033174                         180$:  CKLOOP                           ;LOOP IF SELECTED
     033174  104406                                                                    TRAP    C$CLP1
4868 033176  012703  036526                MOV     #T30IMV,R3               ;SET UP POINTER TO COMMAND TABLE
4869
4870 033202  011337  036376         182$:  MOV     (R3),T30ETM              ;GET NEXT COMMAND
4871 033206  012704  036360                MOV     #T30PACKET,R4            ;SUBROUTINE NEEDS PACKET ADDRESS
4872
4873                                ;*********************************************************
4874                                ;
4875                                ;ISSUE WRITE CHARACTERISTICS COMMAND
4876                                ;
4877                                ;*********************************************************
4878
4879 033212  004737  010332                JSR     PC,WRTCHR                ;ISSUE WRITE CHARACTERISTICS
4880 033216  103407                        BCS     188$                     ;BR, IF COMMAND ISSUED OK
4881 033220  004737  020106                JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
4885 033224  010001                        MOV     R0,R1                    ;SAVE CONTENTS OF TSSR
4886 033226                                ERRHRD  ERRNO,WRTMSG,SFIMSG      ;WRITE CHARACTERISTISC FAILED
     033226  104456                                                                    TRAP    C$ERHRD
```

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        033230  000322                                                                    .WORD   210
        033232  004760                                                                    .WORD   WRTMSG
        033234  011666                                                                    .WORD   SFIMSG
   4887 033236                          188$:   CKLOOP                          ;LOOP IF SELECTED
        033236  104406                                                                    TRAP    C$CLP1
   4888
   4889                                 ;*********************************************************
   4890                                 ;
   4891                                 ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
   4892                                 ;
   4893                                 ;*********************************************************
   4894
   4895 033240  012737  141010  036510          MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
   4896 033246  012737  000001  036512          MOV     #1,T30RB                ;SET UP NUMBER TO SKIP
   4897 033254  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   4898 033260  010465  177776          189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   4899 033264  012737  176750  036546          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
   4900 033272  004737  017124          190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   4901 033276  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
   4902 033302  032701  000200                  BIT     #SSR,R1                 ;IS SSR SET YET
   4903 033306  001017                          BNE     191$                    ;BR, IF SSR IS SET
   4904 033310                                  DELAY   250                     ;CALL DELAY ROUTINE
        033310  012727  000250                                                            MOV     #250,(PC)+
        033314  000000                                                                    .WORD   0
        033316  013727  002116                                                            MOV     L$DLY,(PC)+
        033322  000000                                                                    .WORD   0
        033324  005367  177772                                                            DEC     -6(PC)
        033330  001375                                                                    BNE     .-4
        033332  005367  177756                                                            DEC     -22(PC)
        033336  001367                                                                    BNE     .-20
   4905 033340  005337  036546                  DEC     T30DLY                  ;BUMP DELAY ROUTINE
   4906 033344  001352                          BNE     190$                    ;BR, IF MORE DELAY TO GO
   4907 033346  012702  000200          191$:   MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
   4908 033352  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
   4909 033354  001406                          BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
   4910 033356  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   4914 033362                                  ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
        033362  104456                                                                    TRAP    C$ERHRD
        033364  000323                                                                    .WORD   211
        033366  037004                                                                    .WORD   T30SKM
        033370  011700                                                                    .WORD   PKTSSR
   4915 033372                          192$:   CKLOOP                          ;LOOP IF SELECTED
        033372  104406                                                                    TRAP    C$CLP1
   4916
   4917                                 ;*********************************************************
   4918                                 ;
   4919                                 ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
   4920                                 ;
   4921                                 ;*********************************************************
   4922
   4923 033374  013701  036406                  MOV     T30BFR+6,R1             ;PICK UP XSTO
   4924 033400  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   4925 033402  052702  100000                  BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
   4926 033406  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
   4927 033410  001406                          BEQ     195$                    ;BR, IF EQUAL (OK)
   4928 033412  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   4932 033416                                  ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
```

```
        033416  104456                                                                    TRAP    C$ERHRD
        033420  000324                                                                    .WORD   212
        033422  040404                                                                    .WORD   T30TMK
        033424  016350                                                                    .WORD   EXPREC
   4933 033426                          195$:   CKLOOP                          ;LOOP IF SELECTED
        033426  104406                                                                    TRAP    C$CLP1
   4934 033430  012700  177777                  MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
   4935 033434  004737  020400                  JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
   4936 033440  013737  003076  036512          MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
   4937
   4938                                 ;*************************************************************
   4939                                 ;
   4940                                 ;READ FORWARD,ACK,CVC=1 COMMAND
   4941                                 ;
   4942                                 ;*************************************************************
   4943
   4944 033446  012737  140001  036510          MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
   4945 033454  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   4946 033460  012737  003720  036516          MOV     #2000.,T30SZ            ;SET UP RECORD SIZE IN PACKET
   4947 033466  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   4948 033472  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   4949 033476  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   4950 033502  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
   4951 033506  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
   4952 033510  001406                          BEQ     200$                    ;BR, IF OK
   4953 033512  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   4957 033516                                  ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        033516  104456                                                                    TRAP    C$ERHRD
        033520  000325                                                                    .WORD   213
        033522  037303                                                                    .WORD   T30RDF
        033524  011700                                                                    .WORD   PKTSSR
   4958 033526                          200$:   CKLOOP                          ;LOOP IF SELECTED
        033526  104406                                                                    TRAP    C$CLP1
   4959 033530  017701  147342                  MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
   4960 033534  012702  177777                  MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
   4961 033540  020102                          CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
   4962 033542  001006                          BNE     220$                    ;BR, IF NO DATA TRANS (GOOD)
   4963 033544  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   4967 033550                                  ERRHRD  ERRNO,T30DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
        033550  104456                                                                    TRAP    C$ERHRD
        033552  000326                                                                    .WORD   214
        033554  040760                                                                    .WORD   T30DTR
        033556  016350                                                                    .WORD   EXPREC
   4968 033560                          220$:   CKLOOP                          ;LOOP IF SELECTED
        033560  104406                                                                    TRAP    C$CLP1
   4969 033562  012702  001001                  MOV     #1001,R2                ;SET UP RECORD NUMBER EXPECTED (FILE 2)
   4970 033566  017701  147304                  MOV     @FREE,R1                ;GET INFO FROM BUFFER
   4971 033572  020201                          CMP     R2,R1                   ;ARE THEY EQUAL
   4972 033574  001406                          BEQ     228$                    ;BR, IF EQUAL (OK)
   4973 033576  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   4977 033602                                  ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
        033602  104456                                                                    TRAP    C$ERHRD
        033604  000327                                                                    .WORD   215
        033606  037132                                                                    .WORD   T30PTB
        033610  016350                                                                    .WORD   EXPREC
   4978 033612                          228$:   CKLOOP                          ;LOOP IF SELECTED
        033612  104406                                                                    TRAP    C$CLP1
```

```
                                        ;*******************************************************
                                        ;
                                        ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
                                        ;
                                        ;*******************************************************

033614  004737  010434                          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
033620  103411                                  BCS     230$                    ;BR, IF NO PROBLEM
033622  010004                                  MOV     R0,R4                   ;SAVE PACKET ADDRESS
033624  016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR STATUS
033630  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
033634                                          ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
033634  104456                                                                                          TRAP    C$ERHRD
033636  000330                                                                                          .WORD   216
033640  040130                                                                                          .WORD   T30RWN
033642  011700                                                                                          .WORD   PKTSSR
033644                                  230$:   CKLOOP                          ;LOOP IF SELECTED
033644  104406                                                                                          TRAP    C$CLP1

                                        ;*******************************************************
                                        ;
                                        ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
                                        ;
                                        ;*******************************************************

033646  013701  036406                          MOV     T30BFR+6,R1             ;PICK UP XSTO
033652  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
033654  052702  000002                          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
033660  020102                                  CMP     R1,R2                   ;DOES EXP = REC'D
033662  001406                                  BEQ     240$                    ;BR, IF EQUAL (OK)
033664  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
033670                                          ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
033670  104456                                                                                          TRAP    C$ERHRD
033672  000331                                                                                          .WORD   217
033674  037731                                                                                          .WORD   T30BOT
033676  016350                                                                                          .WORD   EXPREC
033700                                  240$:   CKLOOP                          ;LOOP IF SELECTED
033700  104406                                                                                          TRAP    C$CLP1
033702  005723                                  TST     (R3)+                   ;POINT TO NEXT POSITION
033704  011301                                  MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
033706  020127  177777                          CMP     R1,#177777              ;END OF TABLE MARKER
033712  001402                                  BEQ     330$                    ;BR, IF AT END OF TABLE
033714  000137  033202                          JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
033720                                  330$:   CKLOOP                          ;LOOP IF SELECTED
033720  104406                                                                                          TRAP    C$CLP1
033722                                          ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
033722                                                                                          L10044:
033722  104403                                                                                          TRAP    C$ESUB
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 2
                                        ;
                                        ;VERIFIES THAT SKIP TAPE MARKS COMMANDS WITH A TAPE
                                        ;MARK COUNT GREATER THAN 1 OPERATE PROPERLY. COUNTS
                                        ;OF 2,3,8,64,256, AND 512 ARE TESTED. THE
                                        ;TESTING SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
                                        ;
                                        ;
                                        ;
                                        ;-

033724                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
033724                                                                                          T2.2:
033724  104402                                                                                          TRAP    C$BSUB
033726  004737  041142                          JSR     PC,T30REST              ;SET COMMAND PACKET
033732  005037  036544                          CLR     T30FCN                  ;CLEAR FILE COUNTER
033736  004737  041234                          JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
033742  004737  041276                          JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
033746  012737  176750  036546                  MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
033754  004737  016650                  10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
033760  103426                                  BCS     20$                     ;BR IF INIT WAS OK
033762                                          DELAY   250                     ;DELAY ROUTINE CALL
033762  012727  000250                                                                          MOV     #250,(PC)+
033766  000000                                                                                  .WORD   0
033770  013727  002116                                                                          MOV     L$DLY,(PC)+
033774  000000                                                                                  .WORD   0
033776  005367  177772                                                                          DEC     -6(PC)
034002  001375                                                                                  BNE     .-4
034004  005367  177756                                                                          DEC     -22(PC)
034010  001367                                                                                  BNE     .-20
034012  005337  036546                          DEC     T30DLY                  ;BUMP COUNTER
034016  001356                                  BNE     10$                     ;BR, IF MORE COUNTING TO DO
034020  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
034024  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
034026                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
034026  104455                                                                                  TRAP    C$ERDF
034030  000332                                                                                  .WORD   218
034032  003554                                                                                  .WORD   SFIERR
034034  011666                                                                                  .WORD   SFIMSG
034036                                  20$:

034036  012704  036360                          MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

                                        ;*************************************************************
                                        ;
                                        ;ISSUE WRITE CHARACTERISTICS COMMAND
                                        ;
                                        ;*************************************************************

034042  004737  010332                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
034046  103407                                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
034050  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
034054  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
034056                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
034056  104456                                                                                  TRAP    C$ERHRD
```

```
        034060  000333                                                                    .WORD   219
        034062  004760                                                                    .WORD   WRTMSG
        034064  011666                                                                    .WORD   SFIMSG
   5070 034066                          23$:    CKLOOP                          ;LOOP IF SELECTED
        034066  104406                                                                    TRAP    C$CLP1
   5071
   5072                                 ;*********************************************************
   5073                                 ;
   5074                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
   5075                                 ;
   5076                                 ;*********************************************************
   5077
   5078 034070  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
   5079 034074  103411                          BCS     30$                     ;BR, IF NO PROBLEM
   5080 034076  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
   5081 034100  016501  000000                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
   5082 034104  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5086 034110                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
        034110  104456                                                                    TRAP    C$ERHRD
        034112  000334                                                                    .WORD   220
        034114  040130                                                                    .WORD   T30RWN
        034116  011700                                                                    .WORD   PKTSSR
   5087 034120                          30$:    CKLOOP                          ;LOOP IF SELECTED
        034120  104406                                                                    TRAP    C$CLP1
   5088
   5089                                 ;*********************************************************
   5090                                 ;
   5091                                 ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
   5092                                 ;
   5093                                 ;*********************************************************
   5094
   5095 034122  013701  036406                  MOV     T30BFR+6,R1             ;PICK UP XSTO
   5096 034126  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   5097 034130  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
   5098 034134  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
   5099 034136  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
   5100 034140  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5104 034144                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        034144  104456                                                                    TRAP    C$ERHRD
        034146  000335                                                                    .WORD   221
        034150  037731                                                                    .WORD   T30BOT
        034152  016350                                                                    .WORD   EXPREC
   5105 034154                          40$:    CKLOOP                          ;LOOP IF SELECTED
        034154  104406                                                                    TRAP    C$CLP1
   5106 034156  012737  000001  036544          MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
   5107 034164  012703  000001          64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
   5108 034170  013737  003076  036512  65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
   5109 034176  012737  000024  036516          MOV     #20.,T30SZ              ;SET RECORD SIZE AT 2000 BYTES
   5110
   5111                                 ;*********************************************************
   5112                                 ;
   5113                                 ;WRITE DATA,ACK,CVC=1 COMMAND
   5114                                 ;
   5115                                 ;*********************************************************
   5116
   5117 034204  012737  140005  036510          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
   5118 034212  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
```

```
034216  013702  036544                  MOV     T30FCN,R2               ;GET FILE COUNTER
034222  000302                          SWAB    R2                      ;MOVE TO UPPER BYTE
034224  010301                          MOV     R3,R1                   ;GET RECORD COUNTER
034226  060201                          ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
034230  010177  146642                  MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
034234  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
034240  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
034244  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
034250  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
034254  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
034256  001406                          BEQ     70$                     ;BR, IF OK
034260  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                                                        ;SOFT ERROR, DON'T CARE ABOUT WRITE
                                                                        ;COMMAND'S RESULTS - CHECKING SKIP
                                                                        ;TAPE MARK COMMAND
034264                                  ERRSOFT ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
034264  104457                                                                          TRAP    C$ERSOFT
034266  000336                                                                          .WORD   222
034270  037060                                                                          .WORD   T30WDD
034272  011700                                                                          .WORD   PKTSSR
034274                          70$:    CKLOOP                          ;LOOP IF SELECTED
034274  104406                                                                          TRAP    C$CLP1
034276  005203                          INC     R3                      ;COUNT THE RECORD COUNTER DOWN
034300  020327  000021                  CMP     R3,#21                  ;AT 20 YET
034304  001331                          BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN

                                ;*****************************************************
                                ;
                                ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
                                ;
                                ;*****************************************************

034306  012737  141011  036510          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
034314  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
034320  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
034324  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
034330  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
034334  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
034340  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
034342  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
034344  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
034350                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
034350  104456                                                                          TRAP    C$ERHRD
034352  000337                                                                          .WORD   223
034354  040252                                                                          .WORD   T30WDC
034356  011700                                                                          .WORD   PKTSSR
034360                          160$:   CKLOOP                          ;LOOP IF SELECTED
034360  104406                                                                          TRAP    C$CLP1
034362  005237  036544                  INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
034366  023727  036544  000031          CMP     T30FCN,#25.             ;WRITE 25 FILES TO TAPE
034374  001273                          BNE     64$                     ;BR, IF NOT AT 25 FILES WRITTEN

                                ;*****************************************************
                                ;
                                ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
                                ;
                                ;*****************************************************
```

```
5172
5173 034376  012737  141011  036510          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5174 034404  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5175 034410  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5176 034414  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5177 034420  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
5178 034424  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
5179 034430  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
5180 034432  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
5181 034434  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5185 034440                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034440  104456                                                                                  TRAP    C$ERHRD
     034442  000340                                                                                  .WORD   224
     034444  040252                                                                                  .WORD   T30WDC
     034446  011700                                                                                  .WORD   PKTSSR
5186 034450                          165$:   CKLOOP                          ;LOOP IF SELECTED
     034450  104406                                                                                  TRAP    C$CLP1
5187
5188                                 ;*********************************************************
5189                                 ;
5190                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5191                                 ;
5192                                 ;*********************************************************
5193
5194 034452  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5195 034456  103411                          BCS     170$                    ;BR, IF NO PROBLEM
5196 034460  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
5197 034462  016501  000000                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5198 034466  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5202 034472                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     034472  104456                                                                                  TRAP    C$ERHRD
     034474  000341                                                                                  .WORD   225
     034476  040130                                                                                  .WORD   T30RWN
     034500  011700                                                                                  .WORD   PKTSSR
5203 034502                          170$:   CKLOOP                          ;LOOP IF SELECTED
     034502  104406                                                                                  TRAP    C$CLP1
5204
5205                                 ;*********************************************************
5206                                 ;
5207                                 ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
5208                                 ;
5209                                 ;*********************************************************
5210
5211 034504  013701  036406                  MOV     T30BFR+6,R1             ;PICK UP XSTO
5212 034510  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5213 034512  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5214 034516  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5215 034520  001406                          BEQ     180$                    ;BR, IF EQUAL (OK)
5216 034522  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5220 034526                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034526  104456                                                                                  TRAP    C$ERHRD
     034530  000342                                                                                  .WORD   226
     034532  037731                                                                                  .WORD   T30BOT
     034534  016350                                                                                  .WORD   EXPREC
5221 034536                          180$:   CKLOOP                          ;LOOP IF SELECTED
     034536  104406                                                                                  TRAP    C$CLP1
5222 034540  012737  000002  036544          MOV     #2,T30FCN               ;SET TO NUMBER OF SKIP "FILES"
```

```
034546  012703  036526                  MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE

034552  011337  036376          182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
034556  012704  036360                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

                                ;*******************************************************
                                ;
                                ;ISSUE WRITE CHARACTERISTICS COMMAND
                                ;
                                ;*******************************************************

034562  004737  010332                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
034566  103407                          BCS     188$                    ;BR, IF COMMAND ISSUED OK
034570  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
034574  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
034576                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        034576  104456                                                                          TRAP    C$ERHRD
        034600  000343                                                                          .WORD   227
        034602  004760                                                                          .WORD   WRTMSG
        034604  011666                                                                          .WORD   SFIMSG
034606                          188$:   CKLOOP                          ;LOOP IF SELECTED
        034606  104406                                                                          TRAP    C$CLP1

                                ;*******************************************************
                                ;
                                ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
                                ;
                                ;*******************************************************

034610  012737  141010  036510           MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
034616  013737  036544  036512           MOV     T30FCN,T30RB            ;SET UP NUMBER TO SKIP
034624  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
034630  010465  177776          189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
034634  012737  176750  036546          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
034642  004737  017124          190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
034646  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
034652  032701  000200                  BIT     #SSR,R1                 ;IS SSR SET YET
034656  001017                          BNE     191$                    ;BR, IF SSR IS SET
034660                                  DELAY   250                     ;CALL DELAY ROUTINE
        034660  012727  000250                                                                  MOV     #250,(PC)+
        034664  000000                                                                          .WORD   0
        034666  013727  002116                                                                  MOV     L$DLY,(PC)+
        034672  000000                                                                          .WORD   0
        034674  005367  177772                                                                  DEC     -6(PC)
        034700  001375                                                                          BNE     .-4
        034702  005367  177756                                                                  DEC     -22(PC)
        034706  001367                                                                          BNE     .-20
034710  005337  036546                  DEC     T30DLY                  ;BUMP DELAY ROUTINE
034714  001352                          BNE     190$                    ;BR, IF MORE DELAY TO GO
034716  012702  000200          191$:   MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
034722  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
034724  001406                          BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
034726  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
034732                                  ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
        034732  104456                                                                          TRAP    C$ERHRD
        034734  000344                                                                          .WORD   228
        034736  037004                                                                          .WORD   T30SKM
```

```
     034740  011700                                                                    .WORD   PKTSSR
5270 034742                          1921:   CKLOOP                          ;LOOP IF SELECTED
     034742  104406                                                                    TRAP    C$CLP1
5271
5272                                 ;*********************************************************
5273                                 ;
5274                                 ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
5275                                 ;
5276                                 ;*********************************************************
5277
5278 034744  013701  036406                  MOV     T30BFR+6,R1             ;PICK UP XSTO
5279 034750  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5280 034752  052702  100000                  BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
5281 034756  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5282 034760  001406                          BEQ     195$                    ;BR, IF EQUAL (OK)
5283 034762  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5287 034766                                  ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
     034766  104456                                                                    TRAP    C$ERHRD
     034770  000345                                                                    .WORD   229
     034772  040404                                                                    .WORD   T30TMK
     034774  016350                                                                    .WORD   EXPREC
5288 034776                          195$:   CKLOOP                          ;LOOP IF SELECTED
     034776  104406                                                                    TRAP    C$CLP1
5289 035000  012700  177777                  MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
5290 035004  004737  020400                  JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
5291 035010  013737  003076  036512          MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
5292
5293                                 ;*********************************************************
5294                                 ;
5295                                 ;READ FORWARD,ACK,CVC-1 COMMAND
5296                                 ;
5297                                 ;*********************************************************
5298
5299 035016  012737  140001  036510          MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC-1 COMMAND
5300 035024  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5301 035030  012737  000024  036516          MOV     #20.,T30SZ              ;SET UP RECORD SIZE IN PACKET
5302 035036  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5303 035042  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5304 035046  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5305 035052  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
5306 035056  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5307 035060  001406                          BEQ     200$                    ;BR, IF OK
5308 035062  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5312 035066                                  ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035066  104456                                                                    TRAP    C$ERHRD
     035070  000346                                                                    .WORD   230
     035072  037303                                                                    .WORD   T30RDF
     035074  011700                                                                    .WORD   PKTSSR
5313 035076                          200$:   CKLOOP                          ;LOOP IF SELECTED
     035076  104406                                                                    TRAP    C$CLP1
5314 035100  017701  145772                  MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
5315 035104  012702  177777                  MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
5316 035110  020102                          CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
5317 035112  001006                          BNE     220$                    ;BR, IF NO DATA TRANS (GOOD)
5318 035114  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5322 035120                                  ERRHRD  ERRNO,T30DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
     035120  104456                                                                    TRAP    C$ERHRD
```

```
        035122  000347                                                                    .WORD   231
        035124  040760                                                                    .WORD   T30DTR
        035126  016350                                                                    .WORD   EXPREC
   5323 035130                          220$:   CKLOOP                          ;LOOP IF SELECTED
        035130  104406                                                                    TRAP    C$CLP1
   5324 035132  013702  036544                  MOV     T30FCN,R2                  ;GET NUMBER OF SKIPS
   5325 035136  005202                          INC     R2                         ;SET TO CORRECT FILE VALUE
   5326 035140  000302                          SWAB    R2                         ;SWAP BYTE HALVES
   5327 035142  052702  000001                  BIS     #BIT0,R2                   ;SET FOR RECORD #1
   5328 035146  017701  145724                  MOV     @FREE,R1                   ;GET INFO FROM BUFFER
   5329 035152  020201                          CMP     R2,R1                      ;ARE THEY EQUAL
   5330 035154  001406                          BEQ     228$                       ;BR, IF EQUAL (OK)
   5331 035156  004737  020106                  JSR     PC,FATCHK                  ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5335 035162                                  ERRHRD  ERRNO,T30PTB,EXPREC        ;RECORD POSITION WAS NOT CORRECT
        035162  104456                                                                    TRAP    C$ERHRD
        035164  000350                                                                    .WORD   232
        035166  037132                                                                    .WORD   T30PTB
        035170  016350                                                                    .WORD   EXPREC
   5336 035172                          228$:   CKLOOP                          ;LOOP IF SELECTED
        035172  104406                                                                    TRAP    C$CLP1
   5337
   5338                                 ;*********************************************************
   5339                                 ;
   5340                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
   5341                                 ;
   5342                                 ;*********************************************************
   5343
   5344 035174  004737  010434                  JSR     PC,REWIND                  ;CALL TAPE REWIND COMMAND
   5345 035200  103411                          BCS     230$                       ;BR, IF NO PROBLEM
   5346 035202  010004                          MOV     R0,R4                      ;SAVE PACKET ADDRESS
   5347 035204  016501  000000                  MOV     TSSR(R5),R1                ;GET TSSR STATUS
   5348 035210  004737  020106                  JSR     PC,FATCHK                  ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5352 035214                                  ERRHRD  ERRNO,T30RWN,PKTSSR        ;REWIND NOT ACCEPTED
        035214  104456                                                                    TRAP    C$ERHRD
        035216  000351                                                                    .WORD   233
        035220  040130                                                                    .WORD   T30RWN
        035222  011700                                                                    .WORD   PKTSSR
   5353 035224                          230$:   CKLOOP                          ;LOOP IF SELECTED
        035224  104406                                                                    TRAP    C$CLP1
   5354
   5355                                 ;*********************************************************
   5356                                 ;
   5357                                 ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
   5358                                 ;
   5359                                 ;*********************************************************
   5360
   5361 035226  013701  036406                  MOV     T30BFR+6,R1                ;PICK UP XSTO
   5362 035232  010102                          MOV     R1,R2                      ;SET UP EXPECTED
   5363 035234  052702  000002                  BIS     #BIT1,R2                   ;SET BOT BIT IN EXPECTED
   5364 035240  020102                          CMP     R1,R2                      ;DOES EXP = REC'D
   5365 035242  001406                          BEQ     240$                       ;BR, IF EQUAL (OK)
   5366 035244  004737  020106                  JSR     PC,FATCHK                  ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5370 035250                                  ERRHRD  ERRNO,T30BOT,EXPREC        ;TAPE NOT AT BOT AFTER REWIND
        035250  104456                                                                    TRAP    C$ERHRD
        035252  000352                                                                    .WORD   234
        035254  037731                                                                    .WORD   T30BOT
        035256  016350                                                                    .WORD   EXPREC
```

```
5371 035260                          240$:   CKLOOP                          ;LOOP IF SELECTED
     035260  104406                                                                          TRAP    C$CLP1
5372 035262  005723                          TST     (R3)+                   ;POINT TO NEXT POSITION
5373 035264  011301                          MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
5374 035266  020127  177777                  CMP     R1,#177777              ;END OF TABLE MARKER
5375 035272  001410                          BEQ     330$                    ;BR, IF AT END OF TABLE
5376 035274  013701  036544                  MOV     T30FCN,R1               ;GET NUMBER OF SKIPS
5377 035300  000241                          CLC                             ;CLEAR THE CARRY BIT
5378 035302  006101                          ROL     R1                      ;PUSH OVER ONE POSITION
5379 035304  010137  036544                  MOV     R1,T30FCN               ;PUT BACK IN COUNTER
5380 035310  000137  034552                  JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
5381 035314                          330$:   CKLOOP                          ;LOOP IF SELECTED
     035314  104406                                                                          TRAP    C$CLP1
5382 035316                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     035316                                                                          L10045:
     035316  104403                                                                          TRAP    C$ESUB
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 3
                                        ;
                                        ;
                                        ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
                                        ;ISSUED WHILE THE TAPE IS POSITIONED AT BOT CAUSES
                                        ;FUNCTION REJECT TERMINATION, WITH THE NON-EXECUTABLE
                                        ;FUNCTION (NEF) ERROR BIT SET.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
035320                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
035320                                                                                          T2.3:
035320  104402                                                                                          TRAP    C$BSUB
035322  004737  041142                          JSR     PC,T3OREST              ;SET COMMAND PACKET
035326  005037  036544                          CLR     T3OFCN                  ;CLEAR FILE COUNTER
035332  004737  041234                          JSR     PC,T3ORT2               ;SET UP OTHER COMMAND PACKET
035336  004737  041276                          JSR     PC,T3ORT3               ;SET UP OTHER COMMAND PACKET
035342  012737  176750  036546                  MOV     #65000.,T3ODLY          ;SET UP DELAY COUNTER
035350  004737  016650                  10$:    JSR     PC,SOF1NIT              ;DO INITIALIZE ON CONTROLLER
035354  103426                                  BCS     20$                     ;BR IF INIT WAS OK
035356                                          DELAY   250                     ;DELAY ROUTINE CALL
035356  012727  000250                                                                          MOV     #250,(PC)+
035362  000000                                                                                  .WORD   0
035364  013727  002116                                                                          MOV     L$DLY,(PC)+
035370  000000                                                                                  .WORD   0
035372  005367  177772                                                                          DEC     -6(PC)
035376  001375                                                                                  BNE     .-4
035400  005367  177756                                                                          DEC     -22(PC)
035404  001367                                                                                  BNE     .-20
035406  005337  036546                          DEC     T3ODLY                  ;BUMP COUNTER
035412  001356                                  BNE     10$                     ;BR, IF MORE COUNTING TO DO
035414  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
035420  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
035422                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
035422  104455                                                                                          TRAP    C$ERDF
035424  000353                                                                                          .WORD   235
035426  003554                                                                                          .WORD   SFIERR
035430  011666                                                                                          .WORD   SFIMSG
035432                                  20$:

035432  012704  036360                          MOV     #T3OPACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

                                        ;*************************************************
                                        ;
                                        ;ISSUE WRITE CHARACTERISTICS COMMAND
                                        ;
                                        ;*************************************************

035436  004737  010332                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
035442  103407                                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
035444  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
035450  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
```

```
035452                                  ERRHRD  ERRNO,WRTMSG,SFIMSG      ;WRITE CHARACTERISTISC FAILED
035452  104456                                                                                  TRAP    C$ERHRD
035454  000354                                                                                  .WORD   236
035456  004760                                                                                  .WORD   WRTMSG
035460  011666                                                                                  .WORD   SFIMSG
035462                          23$:    CKLOOP                          ;LOOP IF SELECTED
035462  104406                                                                                  TRAP    C$CLP1

                                ;*************************************************************
                                ;
                                ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
                                ;
                                ;*************************************************************

035464  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
035470  103411                          BCS     30$                     ;BR, IF NO PROBLEM
035472  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
035474  016501  000000                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
035500  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
035504                                  ERRHRD  ERRNO,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
035504  104456                                                                                  TRAP    C$ERHRD
035506  000355                                                                                  .WORD   237
035510  040130                                                                                  .WORD   T3ORWN
035512  011700                                                                                  .WORD   PKTSSR
035514                          30$:    CKLOOP                          ;LOOP IF SELECTED
035514  104406                                                                                  TRAP    C$CLP1

                                ;*************************************************************
                                ;
                                ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
                                ;
                                ;*************************************************************

035516  013701  036406                  MOV     T30BFR+6,R1             ;PICK UP XSTO
035522  010102                          MOV     R1,R2                   ;SET UP EXPECTED
035524  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
035530  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
035532  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
035534  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
035540                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
035540  104456                                                                                  TRAP    C$ERHRD
035542  000356                                                                                  .WORD   238
035544  037731                                                                                  .WORD   T30BOT
035546  016350                                                                                  .WORD   EXPREC
035550                          40$:    CKLOOP                          ;LOOP IF SELECTED
035550  104406                                                                                  TRAP    C$CLP1
035552  012737  000001  036512          MOV     #1,T30WB                ;SET # OF TM TO SKIP

                                ;*************************************************************
                                ;
                                ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
                                ;
                                ;*************************************************************

035560  012737  141410  036510          MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
035566  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
035572  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

```
5481 035576  004737  017124                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5482 035602  016500  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5483 035606  012702  100206                MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
5484 035612  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
5485 035614  001406                        BEQ     70$                     ;BR, IF OK
5486 035616  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5490 035622                                ERRHRD  ERRNO,T30IBT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035622  104456                                                                                TRAP    C$ERHRD
     035624  000357                                                                                .WORD   239
     035626  036721                                                                                .WORD   T30IBT
     035630  011700                                                                                .WORD   PKTSSR
5491 035632                        70$:    CKLOOP                          ;LOOP IF SELECTED
     035632  104406                                                                                TRAP    C$CLP1
5492
5493                               ;*************************************************
5494                               ;
5495                               ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
5496                               ;
5497                               ;*************************************************
5498
5499 035634  013701  036406                MOV     T30BFR+6,R1             ;PICK UP XSTO
5500 035640  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5501 035642  052702  002000                BIS     #BIT10,R2               ;SET NEF BIT IN EXPECTED
5502 035646  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5503 035650  001406                        BEQ     180$                    ;BR, IF EQUAL (OK)
5504 035652  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5508 035656                                ERRHRD  ERRNO,T30NEF,EXPREC     ;TAPE NOT AT NEF
     035656  104456                                                                                TRAP    C$ERHRD
     035660  000360                                                                                .WORD   240
     035662  040466                                                                                .WORD   T30NEF
     035664  016350                                                                                .WORD   EXPREC
5509 035666                        180$:   CKLOOP                          ;LOOP IF SELECTED
     035666  104406                                                                                TRAP    C$CLP1
5510 035670                                ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     035670                                                                        L10046:
     035670  104403                                                                                TRAP    C$ESUB
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 4
                                        ;
                                        ;
                                        ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
                                        ;ISSUED WHILE THE TAPE IS POSITIONED JUST BEFORE THE
                                        ;FIRST RECORD ON ON TAPE (BUT NOT AT BOT) CAUSES TAPE
                                        ;STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT
                                        ;(RIB) STATUS BIT SET.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
035672                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
035672                                                                                          T2.4:
035672  104402                                                                                          TRAP    C$BSUB
035674  004737  041142                          JSR     PC,T3OREST              ;SET COMMAND PACKET
035700  005037  036544                          CLR     T3OFCN                  ;CLEAR FILE COUNTER
035704  004737  041234                          JSR     PC,T3ORT2               ;SET UP OTHER COMMAND PACKET
035710  004737  041276                          JSR     PC,T3ORT3               ;SET UP OTHER COMMAND PACKET
035714  012737  176750  036546                  MOV     #65000.,T3ODLY          ;SET UP DELAY COUNTER
035722  004737  016650                  10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
035726  103426                                  BCS     20$                     ;BR IF INIT WAS OK
035730                                          DELAY   250                     ;DELAY ROUTINE CALL
035730  012727  000250                                                                          MOV     #250,(PC)+
035734  000000                                                                                  .WORD   0
035736  013727  002116                                                                          MOV     L$DLY,(PC)+
035742  000000                                                                                  .WORD   0
035744  005367  177772                                                                          DEC     -6(PC)
035750  001375                                                                                  BNE     .-4
035752  005367  177756                                                                          DEC     -22(PC)
035756  001367                                                                                  BNE     .-20
035760  005337  036546                          DEC     T3ODLY                  ;BUMP COUNTER
035764  001356                                  BNE     10$                     ;BR, IF MORE COUNTING TO DO
035766  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
035772  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
035774                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
035774  104455                                                                                          TRAP    C$ERDF
035776  000361                                                                                          .WORD   241
036000  003554                                                                                          .WORD   SFIERR
036002  011666                                                                                          .WORD   SFIMSG
036004                                  20$:

036004  012704  036360                          MOV     #T3OPACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

                                        ;*************************************************************
                                        ;
                                        ;ISSUE WRITE CHARACTERISTICS COMMAND
                                        ;
                                        ;*************************************************************

036010  004737  010332                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
036014  103407                                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
036016  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
```

```
036022  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
036024                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
036024  104456                                                                          TRAP    C$ERHRD
036026  000362                                                                          .WORD   242
036030  004760                                                                          .WORD   WRTMSG
036032  011666                                                                          .WORD   SFIMSG
036034                          23$:    CKLOOP                          ;LOOP IF SELECTED
036034  104406                                                                          TRAP    C$CLP1

                                ;*************************************************
                                ;
                                ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
                                ;
                                ;*************************************************

036036  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
036042  103411                          BCS     30$                     ;BR, IF NO PROBLEM
036044  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
036046  016501  000000                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
036052  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
036056                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
036056  104456                                                                          TRAP    C$ERHRD
036060  000363                                                                          .WORD   243
036062  040130                                                                          .WORD   T30RWN
036064  011700                                                                          .WORD   PKTSSR
036066                          30$:    CKLOOP                          ;LOOP IF SELECTED
036066  104406                                                                          TRAP    C$CLP1

                                ;*************************************************
                                ;
                                ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
                                ;
                                ;*************************************************

036070  013701  036406                  MOV     T30BFR+6,R1             ;PICK UP XSTO
036074  010102                          MOV     R1,R2                   ;SET UP EXPECTED
036076  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
036102  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
036104  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
036106  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
036112                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
036112  104456                                                                          TRAP    C$ERHRD
036114  000364                                                                          .WORD   244
036116  037731                                                                          .WORD   T30BOT
036120  016350                                                                          .WORD   EXPREC
036122                          40$:    CKLOOP                          ;LOOP IF SELECTED
036122  104406                                                                          TRAP    C$CLP1
036124  013737  003076  036512          MOV     FREE,T30WB              ;SET UP GOOD WRITE BUFFER
036132  012737  000400  036516          MOV     #256.,T30SZ             ;SET UP SIZE

                                ;*************************************************
                                ;
                                ;WRITE DATA,ACK,CVC=1 COMMAND
                                ;
                                ;*************************************************

036140  012737  140005  036510          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
```

```
036146  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
036152  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
036156  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
036162  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
036166  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
036172  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
036174  001406                          BEQ     70$                     ;BR, IF OK
036176  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                                                        ;SOFT ERROR, DON'T CARE ABOUT WRITE
                                                                        ;COMMAND'S RESULTS - CHECKING SKIP
                                                                        ;TAPE MARK COMMAND
036202                                  ERRSOFT ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
036202  104457                                                                          TRAP    C$ERSOFT
036204  000365                                                                          .WORD   245
036206  037060                                                                          .WORD   T30WDD
036210  011700                                                                          .WORD   PKTSSR
036212                          70$:    CKLOOP                          ;LOOP IF SELECTED
036212  104406                                                                          TRAP    C$CLP1

                                ;*************************************************
                                ;
                                ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
                                ;
                                ;*************************************************

036214  012737  000001  036512          MOV     #1,T30WB                ;# OF TM TO SKIP
036222  012737  141410  036510          MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
036230  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
036234  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
036240  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
036244  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
036250  012702  100204                  MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED (SSR AND SC ONLY)
036254  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
036256  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
036260  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
036264                                  ERRHRD  ERRNO,T30IBU,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
036264  104456                                                                          TRAP    C$ERHRD
036266  000366                                                                          .WORD   246
036270  036550                                                                          .WORD   T30IBU
036272  011700                                                                          .WORD   PKTSSR
036274                          160$:   CKLOOP                          ;LOOP IF SELECTED
036274  104406                                                                          TRAP    C$CLP1

                                ;*************************************************
                                ;
                                ;GET EXTENDED STATUS REGISTER ZERO (XST3) FROM MESSAGE BUFFER
                                ;
                                ;*************************************************

036276  013701  036414                  MOV     T30BFR+14,R1            ;PICK UP XST3
036302  010102                          MOV     R1,R2                   ;SET UP EXPECTED
036304  052702  000001                  BIS     #BIT0,R2                ;SET RIB BIT IN EXPECTED
036310  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
036312  001406                          BEQ     170$                    ;BR, IF EQUAL (OK)
036314  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
036320                                  ERRHRD  ERRNO,T30RIB,EXPREC     ;TAPE NOT AT RIB
036320  104456                                                                          TRAP    C$ERHRD
```

```
        036322  000367                                                                    .WORD   247
        036324  036635                                                                    .WORD   T30RIB
        036326  016350                                                                    .WORD   EXPREC
   5664 036330                          170$:   CKLOOP                  ;LOOP IF SELECTED
        036330  104406                                                                    TRAP    C$CLP1
   5665 036332                                  ENDSUB                  ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
        036332                                                                      L10047:
        036332  104403                                                                    TRAP    C$ESUB
   5666                                 ;SUBTEST END
   5667                                 ;
   5668                                 ;
   5669 036334  004737  017362                  JSR     PC,TSTLOOP          ;DO WE NEED TO ITERATE TEST
   5670 036340  103002                          BCC     400$                ;BR, IF NO LOOP REQUIRED
   5671 036342  000137  032362                  JMP     T30LOOP             ;EXECUTE AGAIN
   5672 036346                          400$:   EXIT    TST                 ;ALL DONE THIS TEST
        036346  104432                                                                    TRAP    C$EXIT
        036350  002750                                                                    .WORD   L10043-.
```

```
                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
036352                                  .BLKB   10-<.-TUV2A&7>
036360                          T30PACKET:                              ;COMMAND PACKET FOR TEST
036360  100004                          .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
036362  036370                          .WORD   T30DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
036364  000000                          .WORD   0
036366  000012                          .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
036370                          T30DATA:                                ;CHARACTERISTICS DATA BLOCK
036370  036400                          .WORD   T30BFR                  ;ADDRESS OF MESSAGE BUFFER
036372  000000                          .WORD   0
036374  000024                          .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
036376  000000                  T30ETM: .WORD   0                       ;SKIP TAPE MARK CONTROL
036400                          T30BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
036462                                  .BLKB   10-<.-TUV2A&7>
036470                          T30PK2:
036470  100006                          .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
036472  036520                          .WORD   T30BF2                  ;ADDRESS OF SELECT BLOCK DATA
036474  000000                          .WORD   0
036476  000006                          .WORD   6.                      ;SIZE OF DATA PACKET
036500                                  .BLKB   10-<.-TUV2A&7>
036510                          T30PK3:
036510  100205                          .WORD   100205                  ;REREAD COMMAND, IE AND ACK
036512                          T30RB:
036512  003076                  T30WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
036514  000000                          .WORD   0
036516  000000                  T30SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                        .EVEN
036520                          T30BF2:
036520     010                  T30BS0: .BYTE   10                      ;BSEL0 AREA
036521     200                  T30BS1: .BYTE   200                     ;BSEL1 AREA
036522  000000                  T30S2:  .WORD   0                       ;SEL 2 AREA
036524  000000                  T30S3:  .WORD   0                       ;DATA AREA
                                ;
                                ;
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

036526                          T30IMV:
036526                          T30RN:
036526  000000                          .WORD   000000                  ;NEITHER EWB NOR ESS
036530  000100                          .WORD   000100                  ;EWB SET
036532  000200                          .WORD   000200                  ;ESS SET
036534  000300                          .WORD   000300                  ;BOTH EWB AND ESS SET
036536  177777                          .WORD   177777                  ;END OF DATA
036540  000000                  T30CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
036542  000000                  T30CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
036544  000000                  T30FCN: .WORD   0                       ;FILE NUMBER COUNTER
036546  000000                  T30DLY: .WORD   0                       ;DELAY COUNTER STORAGE
```

```
                                        ;+
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-

036550    124    123    123  T30IBU: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Into BOT'
036635    122    111    102  T30RIB: .ASCIZ  'RIB Bit (XST3) Failed To Set After Reverse Into BOT'
036721    124    123    123  T30IBT: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At BOT'
037004    124    123    123  T30SKM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK Command'
037060    124    123    123  T30WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
037132    124    141    160  T30PTB: .ASCIZ  'Tape Not Positioned On Correct Record After READ REVERSE'
037223    124    141    160  T30TPB: .ASCIZ  'Tape Not Positioned On Second File First Record'
037303    124    123    123  T30RDF: .ASCIZ  'TSSR Incorrect After READ FORWARD Into "File"'
037361    124    123    123  T30RDG: .ASCIZ  'TSSR Incorrect After SPACE Command Into TAPE MARK'
037443    124    123    123  T30WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
037520    111    154    154  T30LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
037601    127    122    111  T30SSR: .ASCIZ  'WRITE MISCELLANEOUS Command Not Accepted'
037652    124    123    123  T30WDE: .ASCIZ  'TSSR Not Correct After SKIP TAPE MARKS, At BOT'
037731    124    141    160  T30BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
037776    124    123    123  T30TM:  .ASCIZ  'TSSR Not Correct After SPACE FORWARD Command'
040053    124    123    123  T30TM2: .ASCIZ  'TSSR Not Correct After SPACE REVERSE Command'
040130    122    145    167  T30RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
040177    104    162    151  T300FL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
040252    124    123    123  T30WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK Command'
040331    103    126    103  T30VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
040404    124    115    113  T30TMK: .ASCIZ  'TMK Not Set After WRITE TAPE MARK (RETRY) Command'
040466    123    113    111  T30NEF: .ASCIZ  'SKIP TAPE MARKS, At BOT, Failed To Set NEF Bit'
040545    124    115    113  T30RRM: .ASCIZ  'TMK Not Set After READ REVERSE Into TAPE MARK'
040623    124    115    113  T30RRN: .ASCIZ  'TMK Not Set After SPACE REVERSE Into TAPE MARK'
040702    124    115    113  T30RRP: .ASCIZ  'TMK Not Set After READ FORWARD Into TAPE MARK'
040760    116    117    040  T30DTR: .ASCIZ  'NO Data Transferred On READ FORWARD'
041024    104    141    164  T30DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
041121    123    153    151  TST30ID:        .ASCIZ  'Skip Tape Marks'
                                        .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

041142                                  T30REST:
041142                                          SAVREG                          ;SAVE THE REGISTERS
041146  012701  036360                          MOV     #T30PACKET,R1           ;START OF THE PACKET
041152  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
041156  012721  036370                          MOV     #T30DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
041162  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
041164  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
041170  012721  036400                          MOV     #T30BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
041174  005021                                  CLR     (R1)+
041176  012721  000024                          MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
041202  005021                                  CLR     (R1)+
041204  012711  000000                          MOV     #0,(R1)                 ;SELECT DRIVE ZERO
041210  012702  000030                          MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
041214  012762  177777  036400  64$:            MOV     #177777,T30BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
041222  005742                                  TST     -(R2)                   ;NEXT LOCATION
```

```
041224  022702  000000                  CMP     #0.,R2                          ;CHECK R2 FOR DONE
041230  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
041232  000207                          RTS     PC                      ;RETURN


                                T30RT2:
041234                                  SAVREG                          ;SAVE THE REGISTERS
041240  012701  036470                  MOV     #T30PK2,R1              ;START OF THE PACKET
041244  012721  100006                  MOV     #100006.(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
041250  012721  036520                  MOV     #T3C3F2,(R1)+           ;ADDRESS OF DATA BLOCK
041254  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
041256  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
041262  005021                          CLR     (R1)+
041264  012701  036520                  MOV     #T30BF2,R1              ;POINT TO DATA SEL AREA
041270  005021                          CLR     (R1)+
041272  005011                          CLR     (R1)
041274  000207                          RTS     PC                      ;RETURN
041276                          T30RT3:
041276                                  SAVREG                          ;SAVE REGISTERS
041302  012701  036510                  MOV     #T30PK3,R1              ;SET UP POINTER ADDRESS
041306  005021                          CLR     (R1)+                   ;COMMAND SPACE
041310  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
041312  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
041314  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
041316  000207                          RTS     PC                      ;RETURN
041320                                  ENDTST
041320                                                                          L10043:
041320  104401                                                                          TRAP    C$ETST
```

```
                                        .SBTTL  TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE
                                ;+
                                ;
                                ;THIS TEST VERIFIES PROPER OPERATION OF THE NO-OP ("CLEAN TAPE") AND INITIALIZE
                                ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 2 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
041322                                  BGNTST
041322                                                                                  T3::
041322  005037  002172                  CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
041326  005037  003104                  CLR     KTFLG                   ;HOLD OFF KT11
041332  012737  005676  002150          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
041340  012700  046413                  MOV     #TST31ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
041344  004737  017414                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
041350  012737  000002  002166          MOV     #2,LOOPCNT              ;PERFORM 2 ITERATIONS
041356  005037  043206                  CLR     T31CNT                  ;CLEAR TAPE RECORD COUNTER
                                ;
                                ;-

041362                          T31LOOP:
```

```
                                        ;+
                                        ;
                                        ;TEST 3, SUBTEST 1
                                        ;
                                        ;       VERIFIES THAT THE NO-OP COMMAND (CORRESPONDS TO THE CLEAN TAPE
                                        ;       COMMAND) TERMINATES PROPERLY (NORMAL TERMINATION), STORES PROPER
                                        ;       STATUS IN THE MESSAGE BUFFER (LIKE THE GET STATUS COMMAND), AND
                                        ;       INDEED DOES NOT MOVE TAPE.  THE TAPE IS FIRST REWOUND AND
                                        ;       WRITTEN WITH SEQUENCED TEST RECORDS.  IT IS THEN REWOUND AGAIN
                                        ;       AND THE NO-OP COMMAND IS ISSUED.  IT IS VERIFIED THAT THE TAPE
                                        ;       IS STILL AT BOT AND THAT PROPER STATUS IS STORED.  THE FIRST
                                        ;       RECORD ON TAPE IS READ AND VERIFIED (TO CHECK TAPE POSITION AND
                                        ;       VERIFY THAT DATA WAS NOT CHANGED). THEN THE NO-OP COMMAND IS
                                        ;       ISSUED AGAIN AND STATUS AND POSITION VERIFIED.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
041362                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
041362                                                                                          T3.1:
041362  104402                                                                                          TRAP    C$BSUB
041364  004737  046460                          JSR     PC,T31REST              ;SET COMMAND PACKET
041370  004737  046552                          JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
041374  004737  046614                          JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
041400  012737  176750  043212                  MOV     #65000.,T31DLY          ;SET UP DELAY COUNTER
041406  004737  016650                  10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
041412  103426                                  BCS     20$                     ;BR IF INIT WAS OK
041414                                          DELAY   250                     ;DELAY ABOUT .25 SEC
041414  012727  000250                                                                          MOV     #250,(PC)+
041420  000000                                                                                  .WORD   0
041422  013727  002116                                                                          MOV     L$DLY,(PC)+
041426  000000                                                                                  .WORD   0
041430  005367  177772                                                                          DEC     -6(PC)
041434  001375                                                                                  BNE     .-4
041436  005367  177756                                                                          DEC     -22(PC)
041442  001367                                                                                  BNE     .-20
041444  005337  043212                          DEC     T31DLY                  ;BUMP COUNTER
041450  001356                                  BNE     10$                     ;BR, IF COUNTER NOT DONE
041452  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
041456  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
041460                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
041460  104455                                                                                  TRAP    C$ERDF
041462  000455                                                                                  .WORD   301
041464  003554                                                                                  .WORD   SFIERR
041466  011666                                                                                  .WORD   SFIMSG
041470                                  20$:
041470  012704  043030                          MOV     #T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
041474  004737  010332                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
041500  103407                                  BCS     25$                     ;BR, IF COMMAND ISSUED OK
041502  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
041506  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
041510                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
041510  104456                                                                                  TRAP    C$ERHRD
041512  000456                                                                                  .WORD   302
```

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        041514  004760                                                                    .WORD   WRTMSG
        041516  011666                                                                    .WORD   SFIMSG
   5894 041520                          23$:    CKLOOP                          ;LOOP IF SELECTED
        041520  104406                                                                    TRAP    C$CLP1
   5895 041522  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
   5896 041526  103407                          BCS     30$                     ;BR, IF NO PROBLEM
   5897 041530  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
   5898 041532  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5902 041536                                  ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
        041536  104456                                                                    TRAP    C$ERHRD
        041540  000457                                                                    .WORD   303
        041542  044544                                                                    .WORD   T31RWN
        041544  011700                                                                    .WORD   PKTSSR
   5903 041546                          30$:    CKLOOP                          ;LOOP IF SELECTED
        041546  104406                                                                    TRAP    C$CLP1
   5904 041550  013701  043056                  MOV     T31BFR+6,R1             ;PICK UP XSTO
   5905 041554  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   5906 041556  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
   5907 041562  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
   5908 041564  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
   5909 041566  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5913 041572                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        041572  104456                                                                    TRAP    C$ERHRD
        041574  000460                                                                    .WORD   304
        041576  044215                                                                    .WORD   T31BOT
        041600  016350                                                                    .WORD   EXPREC
   5914 041602                          40$:    CKLOOP                          ;LOOP IF SELECTED
        041602  104406                                                                    TRAP    C$CLP1
   5915 041604  013737  003076  043162          MOV     FREE,T31WB              ;STARTING WRITE BUFFER ADDRESS
   5916 041612  012737  140005  043160  65$:    MOV     #140005,T31PK3          ;WRITE DATA,CVC=1,ACK COMMAND
   5917 041620  012704  043160                  MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   5918 041624  012700  000144                  MOV     #100.,R0                ;SET PATTERN IN CORRECT REGISTER
   5919 041630  004737  020400                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
   5920 041634  012737  000144  043166          MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
   5921 041642  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   5922 041646  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   5923 041652  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   5924 041656  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
   5925 041662  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
   5926 041664  001406                          BEQ     80$                     ;BR, IF OK
   5927 041666  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5931                                                                         ;SOFT ERROR, DON'T CARE ABOUT WRITE
   5932                                                                         ;COMMAND'S RESULTS - CHECKING
   5933                                                                         ;NO OP COMMAND
   5934 041672                                  ERRSOFT ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        041672  104457                                                                    TRAP    C$ERSOFT
        041674  000461                                                                    .WORD   305
        041676  045100                                                                    .WORD   T31WDC
        041700  011700                                                                    .WORD   PKTSSR
   5935 041702                          80$:    CKLOOP                          ;LOOP IF SELECTED
        041702  104406                                                                    TRAP    C$CLP1
   5936 041704  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
   5937 041710  103407                          BCS     230$                    ;BR, IF NO PROBLEM
   5938 041712  010001                          MOV     R0,R1                   ;SAVE TSSR
   5939 041714  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5943 041720                                  ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
        041720  104456                                                                    TRAP    C$ERHRD
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      041722  000462                                                                    .WORD   306
      041724  044544                                                                    .WORD   T31RWN
      041726  016350                                                                    .WORD   EXPREC
 5944 041730                          230$:   CKLOOP                          ;LOOP IF SELECTED
      041730  104406                                                                    TRAP    C$CLP1
 5945 041732  013701  043056                  MOV     T31BFR+6,R1             ;PICK UP XSTO
 5946 041736  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 5947 041740  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 5948 041744  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 5949 041746  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
 5950 041750  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5954 041754                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      041754  104456                                                                    TRAP    C$ERHRD
      041756  000463                                                                    .WORD   307
      041760  044215                                                                    .WORD   T31BOT
      041762  016350                                                                    .WORD   EXPREC
 5955 041764                          240$:   CKLOOP                          ;LOOP IF SELECTED
      041764  104406                                                                    TRAP    C$CLP1
 5956 041766  012737  041012  043160  265$:   MOV     #041012,T31PK3          ;NO-OP,CVC=1 COMMAND
 5957 041774  012704  043160                  MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 5958 042000  010337  043166                  MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
 5959 042004  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5960 042010  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5961 042014  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5962 042020  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 5963 042024  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 5964 042026  001406                          BEQ     280$                    ;BR, IF OK
 5965 042030  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5969 042034                                  ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      042034  104456                                                                    TRAP    C$ERHRD
      042036  000464                                                                    .WORD   308
      042040  043413                                                                    .WORD   T31RDF
      042042  011700                                                                    .WORD   PKTSSR
 5970 042044                          280$:   CKLOOP                          ;LOOP IF SELECTED
      042044  104406                                                                    TRAP    C$CLP1
 5971 042046  013701  043056                  MOV     T31BFR+6,R1             ;PICK UP XSTO
 5972 042052  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 5973 042054  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 5974 042060  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 5975 042062  001406                          BEQ     285$                    ;BR, IF EQUAL (OK)
 5976 042064  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5980 042070                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042070  104456                                                                    TRAP    C$ERHRD
      042072  000465                                                                    .WORD   309
      042074  044215                                                                    .WORD   T31BOT
      042076  016350                                                                    .WORD   EXPREC
 5981 042100                          285$:   CKLOOP                          ;LOOP IF SELECTED
      042100  104406                                                                    TRAP    C$CLP1
 5982 042102  012737  140001  043160          MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
 5983 042110  012704  043160                  MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 5984 042114  012737  000144  043166          MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
 5985 042122  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5986 042126  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5987 042132  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5988 042136  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 5989 042142  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 5990 042144  001406                          BEQ     290$                    ;BR, IF OK
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 5991 042146  004737  020106                JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5995 042152                                ERRHRD  ERRNO,T31RDE,PKTSSR    ;TSSR INCORRECT AFTER READ DATA
      042152  104456                                                                                  TRAP    C$ERHRD
      042154  000466                                                                                  .WORD   310
      042156  043214                                                                                  .WORD   T31RDE
      042160  011700                                                                                  .WORD   PKTSSR
 5996 042162                          290$:  CKLOOP                         ;LOOP IF SELECTED
      042162  104406                                                                                  TRAP    C$CLP1
 5997 042164  017701  140706                MOV     @FREE,R1               ;GET DATA READ
 5998 042170  012702  000144                MOV     #100.,R2               ;READ EXPECTED
 5999 042174  020102                        CMP     R1,R2                  ;DID TAPE STAY POSITIONED
 6000 042176  001406                        BEQ     330$                   ;BR. IF EXPD = RECD
 6001 042200  004737  020106                JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6005 042204                                ERRHRD  ERRNO,T31WNG,EXPREC    ;TAPE DATA NOT CORRECT
      042204  104456                                                                                  TRAP    C$ERHRD
      042206  000467                                                                                  .WORD   311
      042210  043341                                                                                  .WORD   T31WNG
      042212  016350                                                                                  .WORD   EXPREC
 6006 042214                          330$:
 6007 042214                                ENDSUB                         ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      042214                                                                                   L10051:
      042214  104403                                                                                  TRAP    C$ESUB
```

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                                        ;+
                                        ;
                                        ;TEST 3, SUBTEST 2
                                        ;
                                        ;
                                        ;       VERIFIES THAT THE INITIALIZE COMMAND OPERATES AS A NO-OP,
                                        ;       ASSUMING NO MICRODIAGNOSTIC ERRORS ARE PRESENT (THEY WOULD
                                        ;       ALREADY HAVE BEEN DETECTED IN PREVIOUS TESTS).  THE TEST
                                        ;       SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
                                        ;
                                        ;
                                        ;
                                        ;-
042216                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
042216                                                                                          T3.2:
042216  104402                                                                                          TRAP    C$BSUB
042220  004737  046460                          JSR     PC,T31REST              ;SET COMMAND PACKET
042224  004737  046552                          JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
042230  004737  046614                          JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
042234  004737  016650                          JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
042240  103407                                  BCS     20$                     ;BR IF INIT WAS OK
042242  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042246  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
042250                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
042250  104455                                                                                          TRAP    C$ERDF
042252  000470                                                                                          .WORD   312
042254  003554                                                                                          .WORD   SFIERR
042256  011666                                                                                          .WORD   SFIMSG
042260                                  20$:
042260  012704  043030                          MOV     #T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
042264  004737  010332                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
042270  103407                                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
042272  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042276  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
042300                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
042300  104456                                                                                          TRAP    C$ERHRD
042302  000471                                                                                          .WORD   313
042304  004760                                                                                          .WORD   WRTMSG
042306  011666                                                                                          .WORD   SFIMSG
042310                                  23$:    CKLOOP                          ;LOOP IF SELECTED
042310  104406                                                                                          TRAP    C$CLP1
042312  004737  010434                          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
042316  103407                                  BCS     30$                     ;BR, IF NO PROBLEM
042320  010004                                  MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
042322  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042326                                          ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
042326  104456                                                                                          TRAP    C$ERHRD
042330  000472                                                                                          .WORD   314
042332  044544                                                                                          .WORD   T31RWN
042334  011700                                                                                          .WORD   PKTSSR
042336                                  30$:    CKLOOP                          ;LOOP IF SELECTED
042336  104406                                                                                          TRAP    C$CLP1
042340  013701  043056                          MOV     T31BFR+6,R1             ;PICK UP XSTO
042344  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
042346  052702  000002                          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
042352  020102                                  CMP     R1,R2                   ;DOES EXP = REC'D
042354  001406                                  BEQ     40$                     ;BR, IF EQUAL (OK)
```

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6059 042356  004737  020106                 JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
6063 042362                                 ERRHRD  ERRNO,T31BOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
     042362  104456                                                                                TRAP    C$ERHRD
     042364  000473                                                                                .WORD   315
     042366  044215                                                                                .WORD   T31BOT
     042370  016350                                                                                .WORD   EXPREC
6064 042372                         40$:    CKLOOP                           ;LOOP IF SELECTED
     042372  104406                                                                                TRAP    C$CLP1
6065 042374  013737  003076  043162         MOV     FREE,T31WB               ;STARTING WRITE BUFFER ADDRESS
6066 042402  012737  140005  043160  65$:   MOV     #140005,T31PK3           ;WRITE DATA,CVC=1,ACK COMMAND
6067 042410  012704  043160                 MOV     #T31PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
6068 042414  012700  000144                 MOV     #100.,R0                         ;SET PATTERN IN CORRECT REGISTER
6069 042420  004737  020400                 JSR     PC,FILLMEM               ;FILL MEMORY WITH RECORD SIZE
6070 042424  012737  000144  043166         MOV     #100.,T31SZ              ;SET UP RECORD SIZE IN PACKET
6071 042432  010465  177776                 MOV     R4,TSDB(R5)              ;ISSUE COMMAND
6072 042436  004737  017124                 JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
6073 042442  016501  000000                 MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
6074 042446  012702  000200                 MOV     #SSR,R2                  ;SET UP EXPECTED
6075 042452  020102                         CMP     R1,R2                    ;ARE THEY EQUAL
6076 042454  001406                         BEQ     80$                      ;BR, IF OK
6077 042456  004737  020106                 JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
6081                                                                         ;SOFT ERROR, DON'T CARE ABOUT WRITE
6082                                                                         ;COMMAND'S RESULTS - CHECKING
6083                                                                         ;THE INITIALIZE COMMAND
6084 042462                                 ERRSOFT ERRNO,T31WDC,PKTSSR      ;TSSR INCORRECT AFTER WRITE DATA
     042462  104457                                                                                TRAP    C$ERSOFT
     042464  000474                                                                                .WORD   316
     042466  045100                                                                                .WORD   T31WDC
     042470  011700                                                                                .WORD   PKTSSR
6085 042472                         80$:    CKLOOP                           ;LOOP IF SELECTED
     042472  104406                                                                                TRAP    C$CLP1
6086 042474  004737  010434                 JSR     PC,REWIND                ;CALL TAPE REWIND COMMAND
6087 042500  103407                         BCS     230$                     ;BR, IF NO PROBLEM
6088 042502  010001                         MOV     R0,R1                    ;SAVE TSSR
6089 042504  004737  020106                 JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
6093 042510                                 ERRHRD  ERRNO,T31RWN,EXPREC      ;REWIND NOT ACCEPTED
     042510  104456                                                                                TRAP    C$ERHRD
     042512  000475                                                                                .WORD   317
     042514  044544                                                                                .WORD   T31RWN
     042516  016350                                                                                .WORD   EXPREC
6094 042520                         230$:   CKLOOP                           ;LOOP IF SELECTED
     042520  104406                                                                                TRAP    C$CLP1
6095 042522  013701  043056                 MOV     T31BFR+6,R1              ;PICK UP XSTO
6096 042526  010102                         MOV     R1,R2                    ;SET UP EXPECTED
6097 042530  052702  000002                 BIS     #BIT1,R2                 ;SET BOT BIT IN EXPECTED
6098 042534  020102                         CMP     R1,R2                    ;DOES EXP = REC'D
6099 042536  001406                         BEQ     240$                     ;BR, IF EQUAL (OK)
6100 042540  004737  020106                 JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
6104 042544                                 ERRHRD  ERRNO,T31BOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
     042544  104456                                                                                TRAP    C$ERHRD
     042546  000476                                                                                .WORD   318
     042550  044215                                                                                .WORD   T31BOT
     042552  016350                                                                                .WORD   EXPREC
6105 042554                         240$:   CKLOOP                           ;LOOP IF SELECTED
     042554  104406                                                                                TRAP    C$CLP1
6106 042556  012737  041012  043160  265$:  MOV     #041012,T31PK3           ;INITIALIZE,CVC=1 COMMAND
6107 042564  012704  043160                 MOV     #T31PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
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6108 042570  010337  043166                MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
6109 042574  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6110 042600  004737  017124                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6111 042604  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6112 042610  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
6113 042614  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6114 042616  001406                        BEQ     280$                    ;BR, IF OK
6115 042620  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6119 042624                                ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     042624  104456                                                                                TRAP    C$ERHRD
     042626  000477                                                                                .WORD   319
     042630  043413                                                                                .WORD   T31RDF
     042632  011700                                                                                .WORD   PKTSSR
6120 042634                        280$:   CKLOOP                          ;LOOP IF SELECTED
     042634  104406                                                                                TRAP    C$CLP1
6121 042636  013701  043056                MOV     T31BFR+6,R1             ;PICK UP XSTO
6122 042642  010102                        MOV     R1,R2                   ;SET UP EXPECTED
6123 042644  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6124 042650  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
6125 042652  001406                        BEQ     285$                    ;BR, IF EQUAL (OK)
6126 042654  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6130 042660                                ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042660  104456                                                                                TRAP    C$ERHRD
     042662  000500                                                                                .WORD   320
     042664  044215                                                                                .WORD   T31BOT
     042666  016350                                                                                .WORD   EXPREC
6131 042670                        285$:   CKLOOP                          ;LOOP IF SELECTED
     042670  104406                                                                                TRAP    C$CLP1
6132 042672  012737  140001  043160        MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
6133 042700  012704  043160                MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6134 042704  012737  000144  043166        MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
6135 042712  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6136 042716  004737  017124                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6137 042722  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6138 042726  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
6139 042732  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6140 042734  001406                        BEQ     290$                    ;BR, IF OK
6141 042736  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6145 042742                                ERRHRD  ERRNO,T31RDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     042742  104456                                                                                TRAP    C$ERHRD
     042744  000501                                                                                .WORD   321
     042746  043214                                                                                .WORD   T31RDE
     042750  011700                                                                                .WORD   PKTSSR
6146 042752                        290$:   CKLOOP                          ;LOOP IF SELECTED
     042752  104406                                                                                TRAP    C$CLP1
6147 042754  017701  140116                MOV     @FREE,R1                ;GET DATA READ
6148 042760  012702  000144                MOV     #100.,R2                ;READ EXPECTED
6149 042764  020102                        CMP     R1,R2                   ;DID TAPE STAY POSITIONED
6150 042766  001406                        BEQ     330$                    ;BR, IF EXPD = RECD
6151 042770  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6155 042774                                ERRHRD  ERRNO,T31WNH,EXPREC     ;TAPE POSITION NOT CORRECT AFTER INIT
     042774  104456                                                                                TRAP    C$ERHRD
     042776  000502                                                                                .WORD   322
     043000  043260                                                                                .WORD   T31WNH
     043002  016350                                                                                .WORD   EXPREC
6156 043004                        330$:
6157 043004                                ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
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```
        043004                                                                          L10052:
        043004  104403                                                                          TRAP    C$ESUB
   6158                                 ;
   6159                                 ;
   6160                                 ;
   6161 043006  004737  017362                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
   6162 043012  103002                          BCC     163$                    ;BR, IF NO LOOP REQUIRED
   6163 043014  000137  041362                  JMP     T31LOOP                 ;EXECUTE AGAIN
   6164 043020                          163$:   EXIT    TST                     ;ALL DONE THIS TEST
        043020  104432                                                                          TRAP    C$EXIT
        043022  003614                                                                          .WORD   L10050-.
```

```
                                        ;+
                                        ;LOCAL STORAGE FOR THIS TEST
                                        ;-
043024                                          .BLKB   10-<.-TUV2A&7>
043030                                  T31PACKET:                              ;COMMAND PACKET FOR TEST
043030  100004                                  .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
043032  043040                                  .WORD   T31DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
043034  000000                                  .WORD   0
043036  000012                                  .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
043040                                  T31DATA:                                ;CHARACTERISTICS DATA BLOCK
043040  043050                                  .WORD   T31BFR                  ;ADDRESS OF MESSAGE BUFFER
043042  000000                                  .WORD   0
043044  000024                                  .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
043046  000000                                  .WORD   0
043050                                  T31BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                        ;
                                        ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                        ;
043132                                          .BLKB   10-<.-TUV2A&7>
043140                                  T31PK2:
043140  100006                                  .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
043142  043170                                  .WORD   T31BF2                  ;ADDRESS OF SELECT BLOCK DATA
043144  000000                                  .WORD   0
043146  000006                                  .WORD   6.                      ;SIZE OF DATA PACKET

043150                                          .BLKB   10-<.-TUV2A&7>
043160                                  T31PK3:
043160  100005                                  .WORD   100005                  ;REREAD COMMAND, AND ACK
043162                                  T31RB:
043162  003076                          T31WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
043164  000000                                  .WORD   0
043166  000000                          T31SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                                .EVEN
                                        ;
                                        ;
                                        ;
043170                                  T31BF2:
043170     010                          T31BS0: .BYTE   10                      ;BSEL0 AREA
043171     200                          T31BS1: .BYTE   200                     ;BSEL1 AREA
043172  000000                          T31S2:  .WORD   0                       ;SEL 2 AREA
043174  000000                          T31S3:  .WORD   0                       ;DATA AREA
                                        ;
                                        ;
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES

043176  100205                          T31RN:  .WORD   100205                  ;REREAD DATA (NEXT)
043200  100605                          T31WDR: .WORD   100605                  ;REREAD DATA RETRY
043202  102205                          T31CON: .WORD   102205                  ;WRITE CONTINOUS
043204  177777                                  .WORD   177777                  ;END OF DATA

                                        ;
043206  000000                          T31CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
043210  000000                          T31CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
043212  000000                          T31DLY: .WORD   0                       ;DELAY COUNTER
```

```
                                        ;+
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-


043214    124    123    123   T31RDE: .ASCIZ  'TSSR Not Correct After READ Command'
043260    124    141    160   T31WNH: .ASCIZ  'Tape Position Incorrect After INITIALIZE Command'
043341    124    141    160   T31WNG: .ASCIZ  'Tape Position Incorrect After NOP Command'
043413    124    123    123   T31RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
043462    122    105    122   T31RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
043557    120    117    123   T31SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
043641    122    111    102   T31LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
043711    124    123    123   T31WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
043766    111    154    154   T31LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
044047    122    105    122   T31SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
044103    124    123    123   T31WDE: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command,At BOT'
044215    124    141    160   T31BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
044310    116    117    055   T31TIM: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE''S Erase Tape Not Long Enough'
044410    122    105    122   T31EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
044467    124    123    123   T31TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
044544    122    145    167   T31RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
044613    122    101    115   T31RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
044666    124    123    123   T31AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
044735    104    162    151   T31OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
045010    124    123    123   T31WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
045100    124    123    123   T31WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
045153    103    126    103   T31VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
045226    124    123    102   T31BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
045301    127    122    111   T31WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
045370    122    145    141   T31LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
045452    122    145    141   T31LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
045534    122    145    163   T31PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
045622    122    145    141   T31TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
045710    116    117    055   T31NEF: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE, At First Record, Failed To Set RIB Bit
X
046031    124    123    123   T31SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
046106    124    123    123   T31TSA: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE, Into BOT'
046213    124    123    123   T31WRF: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command'
046316    104    141    164   T31DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
046413    116    117    055   TST31ID:        .ASCIZ  'NO-OP ("Clean Tape") And INITIALIZE'
                                        .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

046460                                  T31REST:
046460                                          SAVREG                          ;SAVE THE REGISTERS
046464  012701  043030                          MOV     #T31PACKET,R1           ;START OF THE PACKET
046470  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
046474  012721  043040                          MOV     #T31DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
046500  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
046502  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
046506  012721  043050                          MOV     #T31BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
```

```
046512  005021                          CLR     (R1)+
046514  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
046520  005021                          CLR     (R1)+
046522  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
046526  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
046532  012762  177777  043050  64$:    MOV     #177777,T31BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
046540  005742                          TST     -(R2)                   ;NEXT LOCATION
046542  022702  000000                  CMP     #0,R2                   ;AT END OF LOOP YET
046546  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
046550  000207                          RTS     PC                      ;RETURN


046552                          T31RT2:
046552                                  SAVREG                          ;SAVE THE REGISTERS
046556  012701  043140                  MOV     #T31PK2,R1              ;START OF THE PACKET
046562  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
046566  012721  043170                  MOV     #T31BF2,(R1)+           ;ADDRESS OF DATA BLOCK
046572  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
046574  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
046600  005021                          CLR     (R1)+
046602  012701  043170                  MOV     #T31BF2,R1              ;POINT TO DATA SEL AREA
046606  005021                          CLR     (R1)+
046610  005011                          CLR     (R1)
046612  000207                          RTS     PC                      ;RETURN
046614                          T31RT3:
046614                                  SAVREG                          ;SAVE REGISTERS
046620  012701  043160                  MOV     #T31PK3,R1              ;SET UP POINTER ADDRESS
046624  005021                          CLR     (R1)+                   ;COMMAND SPACE
046626  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
046630  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
046632  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
046634  000207                          RTS     PC                      ;RETURN
046636                                  ENDTST
046636                                                          L10050:
046636  104401                                                          TRAP    C$ETST
```

```
                                        .SBTTL  TEST  4: Erase And Operation Incomplete
                                ;+
                                ;       VERIFIES THAT AN ERASE COMMAND ISSUED WHEN THE TAPE IS
                                ;       POSITIONED AT BOT OPERATES PROPERLY AND ACTUALLY ERASES TAPE.
                                ;       THE FOLLOWING TEST SEQUENCE IS PERFORMED:
                                ;
                                ;          1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
                                ;              WRITTEN, AND THE TAPE IS REWOUND AGAIN.
                                ;
                                ;          2.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
                                ;              OF THE TEST RECORDS.
                                ;
                                ;          3.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED
                                ;              (BOT SHOULD BE 0).
                                ;
                                ;          4.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
                                ;              THE COMMAND TERMINATES WITH TAPE STATUS ALERT, THAT THE
                                ;              REVERSE INTO BOT (RIB) STATUS BIT IS SET, AND THAT NO
                                ;              DATA IS TRANSFERRED.  THIS DEMONSTRATES THAT NO DATA
                                ;              WAS ENCOUNTERED IN THE AREA ERASED BY THE ERASE
                                ;              COMMAND.
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 3 SUBTESTS
                                ;
                                ;-
046640                                  BGNTST
046640                                                                          T4::
046640  005037  002172                  CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
046644  005037  003104                  CLR     KTFLG           ;HOLD OFF KT11
046650  012737  005676  002150          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
046656  012700  052470                  MOV     #TST32ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
046662  004737  017414                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
046666  012737  000001  002166          MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
046674  005037  051340                  CLR     T32CNT                  ;CLEAR TAPE RECORD COUNTER

                                ;+
                                ;       CHECK FOR 1ST PASS, IF 1ST PASS PRINT FAULT LIGHT MESSAGE
                                ;       ELSE SKIP MESSAGE
                                ;-
046700  005737  002722                  TST     FLLTSW                  ;CHECK FAULT SWITCH
046704  001012                          BNE     5$                      ;BR. IF NOT 1ST PASS
046706  005237  002722                  INC     FLLTSW                  ;IT IS 1ST PASS, SET SW FOR LATER
046712                                  PRINTX  #FAULTM                 ;"THIS TEST MAY ILLUMINATE FAULT LIGHT"
046712  012746  052527                                                                  MOV     #FAULTM,-(SP)
046716  012746  000001                                                                  MOV     #1,-(SP)
046722  010600                                                                          MOV     SP,R0
046724  104415                                                                          TRAP    CSPNTX
```

```
        046726  062706  000004                                                                  ADD     #4,SP
  6377  046732                          5$:
  6378
  6379
  6380                                  ;+
  6381                                  ;
  6382                                  ;TEST 4, SUBTEST 1
  6383                                  ;
  6384                                  ;
  6385                                  ;VERIFIES THAT A Erase And Operation Incomplete COMMAND ISSUED WHILE
  6386                                  ;THE TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT
  6387                                  ;TERMINATION, WITH THE NON-EXECUTABLE FUNCTION (NEF)
  6388                                  ;ERROR BIT SET.
  6389                                  ;
  6390                                  ;
  6391                                  ;-
  6392
  6393  046732                          T32LOOP:
  6394                                  ;
  6395                                  ;
  6396                                  ;+
  6397  046732                                  BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
        046732                                                                                  T4.1:
        046732  104402                                                                                  TRAP    C$BSUB
  6398  046734  004737  052632                  JSR     PC,T32REST              ;SET COMMAND PACKET
  6399  046740  004737  052724                  JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
  6400  046744  004737  052754                  JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
  6401  046750  012737  176750  051344          MOV     #65000.,T32DLY          ;SET UP DELAY COUNTER
  6402  046756  004737  016650          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
  6403  046762  103426                          BCS     20$                     ;BR IF INIT WAS OK
  6404  046764                                  DELAY   250                     ;DELAY ABOUT .25 SEC
        046764  012727  000250                                                                  MOV     #250,(PC)+
        046770  000000                                                                          .WORD   0
        046772  013727  002116                                                                  MOV     L$DLY,(PC)+
        046776  000000                                                                          .WORD   0
        047000  005367  177772                                                                  DEC     -6(PC)
        047004  001375                                                                          BNE     .-4
        047006  005367  177756                                                                  DEC     -22(PC)
        047012  001367                                                                          BNE     .-20
  6405  047014  005337  051344                  DEC     T32DLY                  ;BUMP COUNTER
  6406  047020  001356                          BNE     10$                     ;BR, IF COUNTER NOT DONE
  6407  047022  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  6411  047026  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
  6412  047030                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        047030  104455                                                                          TRAP    C$ERDF
        047032  000621                                                                          .WORD   401
        047034  003554                                                                          .WORD   SFIERR
        047036  011666                                                                          .WORD   SFIMSG
  6413  047040                          20$:
  6414  047040  012704  051150                  MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
  6415  047044  004737  010332                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
  6416  047050  103407                          BCS     25$                     ;BR, IF COMMAND ISSUED OK
  6417  047052  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  6421  047056  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
  6422  047060                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        047060  104456                                                                          TRAP    C$ERHRD
        047062  000622                                                                          .WORD   402
```

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        047064  004760                                                                    .WORD   WRTMSG
        047066  011666                                                                    .WORD   SFIMSG
  6423  047070                          25$:    CKLOOP                          ;LOOP IF SELECTED
        047070  104406                                                                    TRAP    C$CLP1
  6424  047072  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  6425  047076  103411                          BCS     26$                     ;BR, IF NO PROBLEM
  6426  047100  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
  6427  047102  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  6428  047106  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  6432  047112                                  ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
        047112  104456                                                                    TRAP    C$ERHRD
        047114  000623                                                                    .WORD   403
        047116  051530                                                                    .WORD   T32RWN
        047120  011700                                                                    .WORD   PKTSSR
  6433  047122                          26$:    CKLOOP                          ;LOOP IF SELECTED
        047122  104406                                                                    TRAP    C$CLP1
  6434  047124  012703  000400                  MOV     #256.,R3                ;STARTING RECORD SIZE
  6435  047130  013737  003076  051302          MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
  6436  047136  012737  140005  051300          MOV     #140005,T32PK3          ;WRITE DATA,CVC=1,ACK COMMAND
  6437  047144  012704  051300                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
  6438  047150  010337  051306          27$:    MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
  6439  047154  010465  177776                  MOV     R4,TSD8(R5)             ;ISSUE COMMAND
  6440  047160  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
  6441  047164  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  6442  047170  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
  6443  047174  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
  6444  047176  001406                          BEQ     28$                     ;BR, IF OK
  6445  047200  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  6449                                                                          ;SOFT ERROR, DON'T CARE ABOUT WRITE
  6450                                                                          ;COMMAND'S RESULTS - CHECKING THE
  6451                                                                          ;ERASE COMMAND
  6452  047204                                  ERRSOFT ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        047204  104457                                                                    TRAP    C$ERSOFT
        047206  000624                                                                    .WORD   404
        047210  052366                                                                    .WORD   T32WDC
        047212  011700                                                                    .WORD   PKTSSR
  6453  047214                          28$:    CKLOOP                          ;LOOP IF SELECTED
        047214  104406                                                                    TRAP    C$CLP1
  6454  047216  005723                          TST     (R3)+                   ;BUMP RECORD COUNTER
  6455  047220  020327  001002                  CMP     R3,#514.                ;AT MAX SIZE YET
  6456  047224  001351                          BNE     27$                     ;BR, IF NOT AT END OF LOOP
  6457  047226  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  6458  047232  103411                          BCS     30$                     ;BR, IF NO PROBLEM
  6459  047234  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  6460  047240  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
  6461  047242  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  6465  047246                                  ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
        047246  104456                                                                    TRAP    C$ERHRD
        047250  000625                                                                    .WORD   405
        047252  051530                                                                    .WORD   T32RWN
        047254  011700                                                                    .WORD   PKTSSR
  6466  047256                          30$:    CKLOOP                          ;LOOP IF SELECTED
        047256  104406                                                                    TRAP    C$CLP1
  6467  047260  013701  051176                  MOV     T32BFR+6,R1             ;PICK UP XSTO
  6468  047264  010102                          MOV     R1,R2                   ;SET UP EXPECTED
  6469  047266  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
  6470  047272  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
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6471 047274  001406                          BEQ     40$                          ;BR, IF EQUAL (OK)
6472 047276  004737  020106                  JSR     PC,FATCHK                    ;INC AND CHECK FOR MORE THAN 25 ERRORS
6476 047302                                  ERRHRD  ERRNO,T32BOE,EXPREC          ;TAPE AT BOT AFTER ERASE
     047302  104456                                                                                    TRAP    C$ERHRD
     047304  000626                                                                                    .WORD   406
     047306  052216                                                                                    .WORD   T32BOE
     047310  016350                                                                                    .WORD   EXPREC
6477 047312                          40$:    CKLOOP                               ;LOOP IF SELECTED
     047312  104406                                                                                    TRAP    C$CLP1
6478 047314  012737  140411  051300          MOV     #140411,T32PK3               ;ERASE TAPE,CVC=1,ACK COMMAND
6479 047322  012704  051300                  MOV     #T32PK3,R4                   ;SET UP R4 WITH PACKET ADDRESS
6480 047326  010465  177776                  MOV     R4,TSDB(R5)                  ;ISSUE COMMAND
6481 047332  004737  017124                  JSR     PC,WAITF                     ;WAIT FOR SSR TO SET
6482 047336  016501  000000                  MOV     TSSR(R5),R1                  ;GET TSSR CONTENTS
6483 047342  012702  000200                  MOV     #SSR,R2                      ;SET UP EXPECTED
6484 047346  020102                          CMP     R1,R2                        ;ARE THEY EQUAL
6485 047350  001406                          BEQ     50$                          ;BR, IF OK
6486 047352  004737  020106                  JSR     PC,FATCHK                    ;INC AND CHECK FOR MORE THAN 25 ERRORS
6490 047356                                  ERRHRD  ERRNO,T32ERA,PKTSSR          ;TSSR INCORRECT AFTER ERASE DATA
     047356  104456                                                                                    TRAP    C$ERHRD
     047360  000627                                                                                    .WORD   407
     047362  051646                                                                                    .WORD   T32ERA
     047364  011700                                                                                    .WORD   PKTSSR
6491 047366                          50$:    CKLOOP                               ;LOOP IF SELECTED
     047366  104406                                                                                    TRAP    C$CLP1
6492 047370  013701  051176                  MOV     T32BFR+6,R1                  ;PICK UP XSTO
6493 047374  010102                          MOV     R1,R2                        ;SET UP EXPECTED
6494 047376  042702  000002                  BIC     #BIT1,R2                     ;SET BOT BIT IN EXPECTED
6495 047402  020102                          CMP     R1,R2                        ;DOES EXP = REC'D
6496 047404  001406                          BEQ     55$                          ;BR, IF EQUAL (OK)
6497 047406  004737  020106                  JSR     PC,FATCHK                    ;INC AND CHECK FOR MORE THAN 25 ERRORS
6501 047412                                  ERRHRD  ERRNO,T32BOE,EXPREC          ;TAPE NOT AT BOT AFTER REWIND
     047412  104456                                                                                    TRAP    C$ERHRD
     047414  000630                                                                                    .WORD   408
     047416  052216                                                                                    .WORD   T32BOE
     047420  016350                                                                                    .WORD   EXPREC
6502 047422                          55$:    CKLOOP                               ;LOOP IF SELECTED
     047422  104406                                                                                    TRAP    C$CLP1
6503 047424  013737  003076  051302          MOV     FREE,T32RB                   ;ADDRESS OF BUFFER
6504 047432  012737  140401  051300          MOV     #140401,T32PK3               ;READ REVERSE,ACK,CVC=1 COMMAND
6505 047440  012737  000400  051306          MOV     #256.,T32SZ                  ;SET UP THE SIZE OF RECORD
6506 047446  012704  051300                  MOV     #T32PK3,R4                   ;SET UP R4 WITH PACKET ADDRESS
6507 047452  010465  177776                  MOV     R4,TSDB(R5)                  ;ISSUE COMMAND
6508 047456  004737  017124                  JSR     PC,WAITF                     ;WAIT FOR SSR TO SET
6509 047462  016501  000000                  MOV     TSSR(R5),R1                  ;GET TSSR CONTENTS
6510 047466  012702  100204                  MOV     #SSR!SC!BIT2,R2              ;SET UP EXPECTED TAPE STATUS ALERT
6511 047472  020102                          CMP     R1,R2                        ;ARE THEY EQUAL
6512 047474  001406                          BEQ     180$                         ;BR, IF OK
6513 047476  004737  020106                  JSR     PC,FATCHK                    ;INC AND CHECK FOR MORE THAN 25 ERRORS
6517 047502                                  ERRHRD  ERRNO,T32TSA,PKTSSR          ;TSSR INCORRECT AFTER READ DATA
     047502  104456                                                                                    TRAP    C$ERHRD
     047504  000631                                                                                    .WORD   409
     047506  052141                                                                                    .WORD   T32TSA
     047510  011700                                                                                    .WORD   PKTSSR
6518 047512                          180$:   CKLOOP                               ;LOOP IF SELECTED
     047512  104406                                                                                    TRAP    C$CLP1
6519 047514  013701  051204                  MOV     T32BFR+14,R1                 ;GET XST3 STATUS WORD
```

```
6520 047520  010102                          MOV     R1,R2                   ;SET UP EXPECTED
6521 047522  052702  000001                  BIS     #BIT0,R2                ;SET THE RIB BIT
6522 047526  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
6523 047530  001406                          BEQ     190$                    ;BR. IF EQUAL (GOOD)
6524 047532  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6528 047536                                  ERRHRD  ERRNO,T32RIB,EXPREC     ;RIB SHOULD BE SET
     047536  104456                                                                                  TRAP    C$ERHRD
     047540  000632                                                                                  .WORD   410
     047542  051766                                                                                  .WORD   T32RIB
     047544  016350                                                                                  .WORD   EXPREC
6529 047546                          190$:
6530 047546                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     047546                                                                                  L10054:
     047546  104403                                                                                  TRAP    C$ESUB
```

```
                                        ;+
                                        ;
                                        ;TEST 4, SUBTEST 2
                                        ;
                                        ;       VERIFIES THAT AN ERASE COMMAND EXECUTED WHEN THE TAPE IS NOT
                                        ;       POSITIONED AT BOT OPERATES PROPERLY AND DOES NOT CORRUPT
                                        ;       PREVIOUS TAPE RECORDS.  THE TEST SEQUENCE IS:
                                        ;
                                        ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
                                        ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
                                        ;
                                        ;
                                        ;            2.  A SPACE RECORDS FORWARD COMMAND IS ISSUED TO MOVE THE
                                        ;                TAPE OFF OF BOT AND SKIP OVER THE FIRST SEVERAL
                                        ;                RECORDS.
                                        ;
                                        ;            3.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
                                        ;                OF THE TEST RECORDS.
                                        ;
                                        ;            4.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED.
                                        ;
                                        ;            5.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
                                        ;                NORMAL TERMINATION IS ACCOMPLISHED AND THAT THE DATA
                                        ;                TRANSFERRED CORRESPONDS TO THAT FOR THE EXPECTED
                                        ;                RECORD.  THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED
                                        ;                IN THE AREA ERASED BY THE ERASE COMMAND, AND THAT THE
                                        ;                PREVIOUS RECORD WAS NOT CORRUPTED.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
047550                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
047550                                                                                  T4.2:
047550  104402                                                                                  TRAP    C$BSUB
047552  004737  052632                          JSR     PC,T32REST              ;SET COMMAND PACKET
047556  004737  052724                          JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
047562  004737  052754                          JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
047566  004737  016650                          JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
047572  103407                                  BCS     20$                     ;BR IF INIT WAS OK
047574  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
047600  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
047602                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
047602  104455                                                                                  TRAP    C$ERDF
047604  000633                                                                                  .WORD   411
047606  003554                                                                                  .WORD   SFIERR
047610  011666                                                                                  .WORD   SFIMSG
047612                                  20$:
047612  012704  051150                          MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
047616  004737  010332                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
047622  103407                                  BCS     23$                     ;BR. IF COMMAND ISSUED OK
047624  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
047630  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
047632                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
047632  104456                                                                                  TRAP    C$ERHRD
```

```
        047634  000634                                                                    .WORD   412
        047636  004760                                                                    .WORD   WRTMSG
        047640  011666                                                                    .WORD   SFIMSG
   6588 047642                          23$:    CKLOOP                          ;LOOP IF SELECTED
        047642  104406                                                                    TRAP    C$CLP1
   6589 047644  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
   6590 047650  103407                          BCS     30$                     ;BR. IF NO PROBLEM
   6591 047652  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
   6592 047654  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   6596 047660                                  ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
        047660  104456                                                                    TRAP    C$ERHRD
        047662  000635                                                                    .WORD   413
        047664  051530                                                                    .WORD   T32RWN
        047666  011700                                                                    .WORD   PKTSSR
   6597 047670                          30$:    CKLOOP                          ;LOOP IF SELECTED
        047670  104406                                                                    TRAP    C$CLP1
   6598 047672  013701  051176                  MOV     T32BFR+6,R1             ;PICK UP XSTO
   6599 047676  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   6600 047700  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
   6601 047704  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
   6602 047706  001406                          BEQ     40$                     ;BR. IF EQUAL (OK)
   6603 047710  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   6607 047714                                  ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        047714  104456                                                                    TRAP    C$ERHRD
        047716  000636                                                                    .WORD   414
        047720  051346                                                                    .WORD   T32BOT
        047722  016350                                                                    .WORD   EXPREC
   6608 047724                          40$:    CKLOOP                          ;LOOP IF SELECTED
        047724  104406                                                                    TRAP    C$CLP1
   6609 047726  012703  000144                  MOV     #100.,R3                ;STARTING RECORD SIZE
   6610 047732  010300                          MOV     R3,R0                   ;SET UP MEMORY FILL
   6611 047734  004737  020400                  JSR     PC,FILLMEM              ;CALL MEMORY FILLER
   6612 047740  013737  003076  051302          MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
   6613 047746  012737  140005  051300  65$:    MOV     #140005,T32PK3          ;WRITE DATA,CVC=1,ACK COMMAND
   6614 047754  012704  051300                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   6615 047760  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
   6616 047762  004737  020400                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
   6617 047766  010337  051306                  MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
   6618 047772  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   6619 047776  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   6620 050002  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   6621 050006  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
   6622 050012  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
   6623 050014  001406                          BEQ     80$                     ;BR. IF OK
   6624 050016  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   6628                                                                         ;SOFT ERROR, DON'T CARE ABOUT WRITE
   6629                                                                         ;COMMAND'S RESULTS - CHECKING THE
   6630                                                                         ;ERASE COMMAND
   6631 050022                                  ERRSOFT ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        050022  104457                                                                    TRAP    C$ERSOFT
        050024  000637                                                                    .WORD   415
        050026  052366                                                                    .WORD   T32WDC
        050030  011700                                                                    .WORD   PKTSSR
   6632 050032                          80$:    CKLOOP                          ;LOOP IF SELECTED
        050032  104406                                                                    TRAP    C$CLP1
   6633 050034  005723                          TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
   6634 050036  020327  000156                  CMP     R3,#110.                ;AT 160 SIZE YET
```

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6635 050042  001341                          BNE     65$                      ;BR. IF MORE RECORDS TO WRITE
6636 050044  004737  010434                  JSR     PC,REWIND                ;CALL TAPE REWIND COMMAND
6637 050050  103407                          BCS     230$                     ;BR. IF NO PROBLEM
6638 050052  010001                          MOV     R0,R1                    ;SAVE TSSR
6639 050054  004737  020106                  JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
6643 050060                                  ERRHRD  ERRNO,T32RWN,EXPREC      ;REWIND NOT ACCEPTED
     050060  104456                                                                                TRAP    C$ERHRD
     050062  000640                                                                                .WORD   416
     050064  051530                                                                                .WORD   T32RWN
     050066  016350                                                                                .WORD   EXPREC
6644 050070                          230$:   CKLOOP                           ;LOOP IF SELECTED
     050070  104406                                                                                TRAP    C$CLP1
6645 050072  013701  051176                  MOV     T32BFR+6,R1              ;PICK UP XSTO
6646 050076  010102                          MOV     R1,R2                    ;SET UP EXPECTED
6647 050100  052702  000002                  BIS     #BIT1,R2                 ;SET BOT BIT IN EXPECTED
6648 050104  020102                          CMP     R1,R2                    ;DOES EXP = REC'D
6649 050106  001406                          BEQ     240$                     ;BR. IF EQUAL (OK)
6650 050110  004737  020106                  JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
6654 050114                                  ERRHRD  ERRNO,T32BOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
     050114  104456                                                                                TRAP    C$ERHRD
     050116  000641                                                                                .WORD   417
     050120  051346                                                                                .WORD   T32BOT
     050122  016350                                                                                .WORD   EXPREC
6655 050124                          240$:   CKLOOP                           ;LOOP IF SELECTED
     050124  104406                                                                                TRAP    C$CLP1
6656 050126  012703  000001                  MOV     #1,R3                    ;SET UP FOR SPACE COMMAND
6657 050132  004737  010134                  JSR     PC,SPACE                 ;ISSUE SPACE COMMAND 1 FORWARD
6658 050136  012737  140411  051300  265$:   MOV     #140411,T32PK3           ;ERASE DATA,ACK COMMAND
6659 050144  012704  051300                  MOV     #T32PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
6660 050150  010465  177776                  MOV     R4,TSDB(R5)              ;ISSUE COMMAND
6661 050154  004737  017124                  JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
6662 050160  016501  000000                  MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
6663 050164  012702  000200                  MOV     #SSR,R2                  ;SET UP EXPECTED
6664 050170  020102                          CMP     R1,R2                    ;ARE THEY EQUAL
6665 050172  001406                          BEQ     280$                     ;BR. IF OK
6666 050174  004737  020106                  JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
6670 050200                                  ERRHRD  ERRNO,T32ERA,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
     050200  104456                                                                                TRAP    C$ERHRD
     050202  000642                                                                                .WORD   418
     050204  051646                                                                                .WORD   T32ERA
     050206  011700                                                                                .WORD   PKTSSR
6671 050210                          280$:   CKLOOP                           ;LOOP IF SELECTED
     050210  104406                                                                                TRAP    C$CLP1
6672 050212  013737  003076  051302          MOV     FREE,T32RB               ;ADDRESS OF BUFFER
6673 050220  012737  140401  051300          MOV     #140401,T32PK3           ;READ REVERSE,ACK,CVC-1 COMMAND
6674 050226  012737  000144  051306          MOV     #100.,T32SZ              ;SET UP THE SIZE OF RECORD
6675 050234  012704  051300                  MOV     #T32PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
6676 050240  010465  177776                  MOV     R4,TSDB(R5)              ;ISSUE COMMAND
6677 050244  004737  017124                  JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
6678 050250  016501  000000                  MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
6679 050254  012702  000200                  MOV     #SSR,R2                  ;SET UP EXPECTED TAPE STATUS ALERT
6680 050260  020102                          CMP     R1,R2                    ;ARE THEY EQUAL
6681 050262  001406                          BEQ     290$                     ;BR. IF OK
6682 050264  004737  020106                  JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
6686 050270                                  ERRHRD  ERRNO,T32TSA,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
     050270  104456                                                                                TRAP    C$ERHRD
     050272  000643                                                                                .WORD   419
```

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        050274  052141                                                                    .WORD   T32TSA
        050276  011700                                                                    .WORD   PKTSSR
   6687 050300                          290$:   CKLOOP                  ;LOOP IF SELECTED
        050300  104406                                                                    TRAP    C$CLP1
   6688 050302  017701  132570                  MOV     @FREE,R1        ;GET DATA READ
   6689 050306  012702  000144                  MOV     #100.,R2        ;SHOULD BE 100
   6690 050312  020102                          CMP     R1,R2           ;CHECK'EM OUT
   6691 050314  001406                          BEQ     300$            ;BR. IF OK
   6692 050316  004737  020106                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
   6696 050322                                  ERRHRD  ERRNO,T32ECF,EXPREC     ;ERASE COMMAND DIDN'T WORK
        050322  104456                                                                    TRAP    C$ERHRD
        050324  000644                                                                    .WORD   420
        050326  052305                                                                    .WORD   T32ECF
        050330  016350                                                                    .WORD   EXPREC
   6697 050332                          300$:   CKLOOP                  ;LOOP IF SELECTED
        050332  104406                                                                    TRAP    C$CLP1
   6698 050334                          330$:
   6699 050334                                  ENDSUB                  ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
        050334                                                                  L10055:
        050334  104403                                                                    TRAP    C$ESUB
```

```
                                        ;+
                                        ;
                                        ;TEST 4, SUBTEST 3
                                        ;
                                        ;       VERIFIES THAT THE OTHER TAPE
                                        ;       MOTTON COMMANDS EXECUTED WHEN THE TAPE IS BLANK
                                        ;       RESULT IN UNRECOVERABLE ERROR TERMINATION AND OPERATION
                                        ;       INCOMPLETE STATUS.  THE FOLLOWING TEST SEQUENCE IS EXECUTED:
                                        ;
                                        ;            1.  THE TAPE IS REWOUND.
                                        ;
                                        ;            2.  ERASE COMMANDS ARE ISSUED SUCH THAT THE TAPE IS POSITIONED
                                        ;                ABOUT IN THE MIDDLE OF THE FIRST TRACK.
                                        ;
                                        ;
                                        ;
                                        ;            3.  IT IS VERIFIED THAT EACH OF THE FOLLOWING COMMANDS
                                        ;                (ISSUED IN THE ORDER GIVEN) RESULTS IN UNRECOVERABLE
                                        ;                ERROR TERMINATION WITH OPI=1:  SPACE RECORDS REVERSE
                                        ;                SKIP TAPE MARKS REVERSE READ REVERSE REREAD PREVIOUS
                                        ;                (OPP=0) REREAD PREVIOUS (OPP=1) REREAD NEXT (OPP=1)
                                        ;                REREAD NEXT (OPP=0) READ NEXT SKIP TAPE MARKS REVERSE
                                        ;                SKIP TAPE MARKS FORWARD SPACE RECORDS FORWARD WRITE
                                        ;                DATA RETRY
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
050336                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
050336                                                                                  T4.3:
050336  104402                                                                                  TRAP    C$BSUB
050340  004737  052724          9$:     JSR     PC,T32RT2                       ;SET UP OTHER COMMAND PACKET
050344  004737  052632                  JSR     PC,T32REST                      ;SET COMMAND PACKET
050350  004737  052754                  JSR     PC,T32RT3                       ;SET UP OTHER COMMAND PACKET
050354  012737  176750  051344          MOV     #65000.,T32DLY                  ;SET UP DELAY COUNTER
050362  004737  016650          10$:    JSR     PC,SOFINIT                      ;DO INITIALIZE ON CONTROLLER
050366  103426                          BCS     20$                             ;BR IF INIT WAS OK
050370                                  DELAY   250                             ;DELAY ABOUT .25 SEC
050370  012727  000250                                                                          MOV     .250,(PC)+
050374  000000                                                                                  .WORD   0
050376  013727  002116                                                                          MOV     L$DLY,(PC)+
050402  000000                                                                                  .WORD   0
050404  005367  177772                                                                          DEC     -6(PC)
050410  001375                                                                                  BNE     .-4
050412  005367  177756                                                                          DEC     -22(PC)
050416  001367                                                                                  BNE     .-20
050420  005337  051344                  DEC     T32DLY                          ;BUMP COUNTER
050424  001356                          BNE     10$                             ;BR, IF COUNTER NOT DONE
050426  004737  020106                  JSR     PC,FATCHK                       ;INC AND CHECK FOR MORE THAN 25 ERRORS
050432  010001                          MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
050434                                  ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
050434  104455                                                                                  TRAP    C$ERDF
050436  000645                                                                                  .WORD   421
050440  003554                                                                                  .WORD   SFIERR
050442  011666                                                                                  .WORD   SFIMSG
050444                          20$:
```

```
6747
6748 050444  012704  051150                MOV     #T32PACKET,R4          ;SUBROUTINE NEEDS PACKET ADDRESS
6749 050450  004737  010332                JSR     PC,WRTCHR              ;ISSUE WRITE CHARACTERISTICS
6750 050454  103407                        BCS     23$                    ;BR, IF COMMAND ISSUED OK
6751 050456  004737  020106                JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
6755 050462  010001                        MOV     R0,R1                  ;SAVE CONTENTS OF TSSR
6756 050464                                ERRHRD  ERRNO,WRTMSG,SFIMSG    ;WRITE CHARACTERISTISC FAILED
     050464  104456                                                                                TRAP    C$ERHRD
     050466  000646                                                                                .WORD   422
     050470  004760                                                                                .WORD   WRTMSG
     050472  011666                                                                                .WORD   SFIMSG
6757 050474                        23$:    CKLOOP                         ;LOOP IF SELECTED
     050474  104406                                                                                TRAP    C$CLP1
6758 050476  004737  010434                JSR     PC,REWIND              ;CALL TAPE REWIND COMMAND
6759 050502  103411                        BCS     30$                    ;BR, IF NO PROBLEM
6760 050504  016501  000000                MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
6761 050510  010004                        MOV     R0,R4                  ;GET PACKET ADDRESS
6762 050512  004737  020106                JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
6766 050516                                ERRHRD  ERRNO,T32RWN,PKTSSR    ;REWIND NOT ACCEPTED
     050516  104456                                                                                TRAP    C$ERHRD
     050520  000647                                                                                .WORD   423
     050522  051530                                                                                .WORD   T32RWN
     050524  011700                                                                                .WORD   PKTSSR
6767 050526                        30$:    CKLOOP                         ;LOOP IF SELECTED
     050526  104406                                                                                TRAP    C$CLP1
6768 050530  013701  051176                MOV     T32BFR+6,R1            ;PICK UP XSTO
6769 050534  010102                        MOV     R1,R2                  ;SET UP EXPECTED
6770 050536  052702  000002                BIS     #BIT1,R2               ;SET BOT BIT IN EXPECTED
6771 050542  020102                        CMP     R1,R2                  ;DOES EXP = REC'D
6772 050544  001406                        BEQ     40$                    ;BR, IF EQUAL (OK)
6773 050546  004737  020106                JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
6777 050552                                ERRHRD  ERRNO,T32BOT,EXPREC    ;TAPE NOT AT BOT AFTER REWIND
     050552  104456                                                                                TRAP    C$ERHRD
     050554  000650                                                                                .WORD   424
     050556  051346                                                                                .WORD   T32BOT
     050560  016350                                                                                .WORD   EXPREC
6778 050562                        40$:    CKLOOP                         ;LOOP IF SELECTED
     050562  104406                                                                                TRAP    C$CLP1
6779 050564  012703  000454                MOV     #300.,R3               ;# OF ERASES SO TAPE IS HALF 1ST TRACK
6780
6781 050570  012737  140411  051300  65$:  MOV     #140411,T32PK3         ;ERASE DATA,CVC=1,ACK COMMAND
6782 050576  012704  051300                MOV     #T32PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
6783 050602  010465  177776                MOV     R4,TSDB(R5)            ;ISSUE COMMAND
6784 050606  004737  017124                JSR     PC,WAITF               ;WAIT FOR SSR TO SET
6785 050612  016501  000000                MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
6786 050616  012702  000200                MOV     #SSR,R2                ;SET UP EXPECTED
6787 050622  020102                        CMP     R1,R2                  ;ARE THEY EQUAL
6788 050624  001407                        BEQ     70$                    ;BR, IF OK
6789 050626  010102                        MOV     R1,R2                  ;SAVE ORIG TSSR
6790 050630  004737  020106                JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
6794 050634                                ERRHRD  ERRNO,T32WDC,PKTSSR    ;TSSR INCORRECT AFTER WRITE DATA
     050634  104456                                                                                TRAP    C$ERHRD
     050636  000651                                                                                .WORD   425
     050640  052366                                                                                .WORD   T32WDC
     050642  011700                                                                                .WORD   PKTSSR
6795 050644  162703  000001        70$:    SUB     #1,R3                  ;BUMP DOWN TO NEXT VALUE
6796 050650  001401                        BEQ     80$                    ;BR, IF 300 ERASES WRITTEN
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6797 050652  000746                          BR      65$                     ;KEEP GOING
6798 050654                          80$:    CKLOOP                          ;LOOP IF SELECTED
     050654  104406                                                                          TRAP    C$CLP1
6799 050656  012703  051310                  MOV     #T32CMD,R3              ;STARTING RECORD SIZE
6800 050662  013737  003076  051302          MOV     FREE,T32RB              ;STARTING READ BUFFER ADDRESS
6801 050670  011337  051300          265$:   MOV     (R3),T32PK3             ;READ DATA,ACK COMMAND
6802 050674  012704  051300                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6803 050700  012700  177777                  MOV     #177777,R0              ;SET PATTERN IN CORRECT REGISTER
6804 050704  004737  020400                  JSR     PC,FILLMEM              ;FILL MEMORY WITH ALL ONES
6805 050710  012737  000144  051306          MOV     #100.,T32SZ             ;SET UP RECORD SIZE IN PACKET
6806 050716  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6807 050722  012737  000012  051344          MOV     #10.,T32DLY             ;SET UP DELAY COUNTER
6808 050730  004737  017124          270$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6809 050734  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6810 050740  012702  100214                  MOV     #SSR!SC!BIT2!BIT3,R2    ;SET UP EXPECTED
6811 050744  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
6812 050746  001425                          BEQ     280$                    ;BR, IF OK
6813 050750                                  DELAY   250                     ;DELAY FOR SSR TO BE SET
     050750  012727  000250                                                                  MOV     #250,(PC)+
     050754  000000                                                                          .WORD   0
     050756  013727  002116                                                                  MOV     L$DLY,(PC)+
     050762  000000                                                                          .WORD   0
     050764  005367  177772                                                                  DEC     -6(PC)
     050770  001375                                                                          BNE     .-4
     050772  005367  177756                                                                  DEC     -22(PC)
     050776  001367                                                                          BNE     .-20
6814 051000  005337  051344                  DEC     T32DLY                  ;COUNT DELAY ROUTINE DOWN
6815 051004  001351                          BNE     270$                    ;BR, IF DELAY HAS NOT ENDED
6816 051006  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6820 051012                                  ERRHRD  ERRNO,T32ECF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     051012  104456                                                                          TRAP    C$ERHRD
     051014  000652                                                                          .WORD   426
     051016  052305                                                                          .WORD   T32ECF
     051020  011700                                                                          .WORD   PKTSSR
6821 051022                          280$:   CKLOOP                          ;LOOP IF SELECTED
     051022  104406                                                                          TRAP    C$CLP1
6822 051024  013701  051204                  MOV     T32BFR+14,R1            ;PICK UP XST3
6823 051030  010102                          MOV     R1,R2                   ;SET UP EXPECTED
6824 051032  052702  000100                  BIS     #BIT6,R2                ;SET OPI BIT IN EXPECTED
6825 051036  020102                          CMP     R1,R2                   ;IS OPI BIT SET
6826 051040  001406                          BEQ     290$                    ;BR, IF BIT IS SET
6827 051042  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6831 051046                                  ERRHRD  ERRNO,T32OPI,EXPREC     ;OPI BIT NOT SET
     051046  104456                                                                          TRAP    C$ERHRD
     051050  000653                                                                          .WORD   427
     051052  052433                                                                          .WORD   T32OPI
     051054  016350                                                                          .WORD   EXPREC
6832 051056                          290$:   CKLOOP                          ;LOOP IF SELECTED
     051056  104406                                                                          TRAP    C$CLP1
6833 051060  005723                          TST     (R3)+                   ;BUMP COMMAND POINTER
6834 051062  021327  177777                  CMP     (R3),#177777            ;AT END OF TABLE YET
6835 051066  001300                          BNE     265$                    ;BR, KEEP TRYING COMMANDS
6836                                 ;
6837                                 ;       REWIND THE DRIVE
6838                                 ;
6839 051070  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6840 051074  103411                          BCS     226$                    ;BR, IF NO PROBLEM
```

BOT'

IB Bit

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 6841 051076  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 6842 051100  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6843 051104  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6847 051110                                  ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
      051110  104456                                                                                  TRAP    C$ERHRD
      051112  000654                                                                                  .WORD   428
      051114  051530                                                                                  .WORD   T32RWN
      051116  011700                                                                                  .WORD   PKTSSR
 6848 051120                          226$:   CKLOOP                          ;LOOP IF SELECTED
      051120  104406                                                                                  TRAP    C$CLP1
 6849
 6850
 6851
 6852 051122                          291$:   ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      051122                                                                                  L10056:
      051122  104403                                                                                  TRAP    C$ESUB
 6853                                 :
 6854                                 :
 6855                                 :
 6856 051124  004737  017362                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 6857 051130  103002                          BCC     163$                    ;BR. IF NO LOOP REQUIRED
 6858 051132  000137  046732                  JMP     T32LOOP                 ;EXECUTE AGAIN
 6859 051136                          163$:   EXIT    TST                     ;ALL DONE THIS TEST
      051136  104432                                                                                  TRAP    C$EXIT
      051140  001636                                                                                  .WORD   L10053-.
```

```
                                        ;+
                                        ;LOCAL STORAGE FOR THIS TEST
                                        ;-
051142                                          .BLKB   10-<.-TUV2A&7>
051150                                  T32PACKET:                              ;COMMAND PACKET FOR TEST
051150  100004                                  .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
051152  051160                                  .WORD   T32DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
051154  000000                                  .WORD   0
051156  000012                                  .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
051160                                  T32DATA:                                ;CHARACTERISTICS DATA BLOCK
051160  051170                                  .WORD   T32BFR                  ;ADDRESS OF MESSAGE BUFFER
051162  000000                                  .WORD   0
051164  000024                                  .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
051166  000000                                  .WORD   0
051170                                  T32BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                        ;
                                        ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                        ;
051252                                          .BLKB   10-<.-TUV2A&7>
051260                                  T32PK2:
051260  100006                                  .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
051262  000000                                  .WORD   0                       ;ADDRESS OF SELECT BLOCK DATA
051264  000000                                  .WORD   0
051266  000006                                  .WORD   6.                      ;SIZE OF DATA PACKET
051270                                          .BLKB   10-<.-TUV2A&7>
051300                                  T32PK3:
051300  100005                                  .WORD   100005                  ;REREAD COMMAND, AND ACK
051302                                  T32RB:
051302  003076                          T32WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
051304  000000                                  .WORD   0
051306  000000                          T32SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES

051310                                  T32CMD:
051310  140410                                  .WORD   140410                  ;SPACE RECORDS REVERSE
051312  141410                                  .WORD   141410                  ;SKIP TAPE MARKS REVERSE
051314  140401                                  .WORD   140401                  ;READ REVERSE
051316  141001                                  .WORD   141001                  ;REREAD PREVIOUS (OPP=0)
051320  161401                                  .WORD   161401                  ;REREAD NEXT (OPP=1)
051322  161001                                  .WORD   161001                  ;REREAD PREVIOUS (OPP=1)
051324  141401                                  .WORD   141401                  ;REREAD NEXT (OPP=0)
051326  140001                                  .WORD   140001                  ;READ NEXT
051330  141410                                  .WORD   141410                  ;SKIP TAPE MARKS REVERSE
051332  141010                                  .WORD   141010                  ;SKIP RECORDS FORWARD
051334  141005                                  .WORD   141005                  ;WRITE DATA RETRY
051336  177777                                  .WORD   177777                  ;END OF DATA

051340  000000                          T32CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
051342  000000                          T32CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
051344  000000                          T32DLY: .WORD   0                       ;DELAY COUNTER
```

```
                                        ;+
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-

051346    124    141    160    T32BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
051441    124    141    160    T32EOT: .ASCIZ  'Tape Status Alert During Erase To EOT, But EOT Not Set'
051530    122    145    167    T32RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
051577    124    123    123    T32AMS: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
051646    124    123    123    T32ERA: .ASCIZ  'TSSR Not Correct After ERASE Command'
051713    124    123    102    T32BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
051766    122    105    101    T32RIB: .ASCIZ  'READ REVERSE, After ERASE From BOT, Failed To Set RIB In XST3'
052064    124    123    123    T32SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
052141    124    123    123    T32TSA: .ASCIZ  'TSSR Not Correct After READ REVERSE Into BOT'
052216    102    117    124    T32BOE: .ASCIZ 'BOT (XSTO) Still Set After Erase From Tape''s BOT Marker'
052305    105    122    101    T32ECF: .ASCIZ  'ERASE Failed To Clear Tape (Erase) Tape Properly'

052366    124    123    123    T32WDC: .ASCIZ  'TSSR Not Correct After ERASE Command'
052433    117    120    111    T32OPI: .ASCIZ  'OPI Bit (XST3) Failed To Set'
052470    105    162    141    TST32ID:        .ASCIZ  'Erase And Operation Incomplete'
052527    045    116    045    FAULTM: .ASCIZ  '%N%A This Test May Illuminate The Drive Fault Light, Not An Error'
                                        .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

052632                          T32REST:
052632                                  SAVREG                          ;SAVE THE REGISTERS
052636  012701  051150                  MOV     #T32PACKET,R1           ;START OF THE PACKET
052642  012721  100004                  MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
052646  012721  051160                  MOV     #T32DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
052652  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
052654  012721  000012                  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
052660  012721  051170                  MOV     #T32BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
052664  005021                          CLR     (R1)+
052666  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
052672  005021                          CLR     (R1)+
052674  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
052700  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
052704  012762  177777  051170  64$:    MOV     #177777,T32BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
052712  005742                          TST     (R2)                    ;NEXT LOCATION
052714  022702  000000                  CMP     #0,R2                   ;AT END OF LOOP YET
052720  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
052722  000207                          RTS     PC                      ;RETURN


052724                          T32RY2:
052724                                  SAVREG                          ;SAVE THE REGISTERS
052730  012701  051260                  MOV     #T32PK2,R1              ;START OF THE PACKET
052734  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM  WITH ACK,
052740  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BL
052742  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
052744  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
```

```
052750  005021                          CLR     (R1)+
052752  000207                          RTS     PC                      ;RETURN
052754                          T32RT3:
052754                                  SAVREG                          ;SAVE REGISTERS
052760  012701  051300                  MOV     #T32PK3,R1              ;SET UP POINTER ADDRESS
052764  005021                          CLR     (R1)+                   ;COMMAND SPACE
052766  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
052770  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
052772  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
052774  000207                          RTS     PC                      ;RETURN
052776                                  ENDTST
052776                                                          L10053:
052776  104401                                                          TRAP    C$ETST
```

```
                                        .SBTTL  TEST  5: OPERATIONS AT EOT
                                ;+
                                ;
                                ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE DATA RETRY
                                ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 1 SUBTEST
                                ;
                                ;
                                ;
                                ;-
053000                                  BGNTST
053000                                                                          T5::
053000  005037  002172                  CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
053004  005037  003104                  CLR     KTFLG           ;HOLD OFF KT11
053010  012737  005676  002150          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
053016  012700  057224                  MOV     #TST34ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
053022  004737  017414                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
053026  012737  000001  002166          MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
053034  005037  055562                  CLR     T34CNT                  ;CLEAR TAPE RECORD COUNTER
                                ;+
                                ;
                                ;TEST 5, SUBTEST 1
                                ;
                                ;
                                ;       THIS TEST VERIFIES THAT THE EOT STATUS IS HANDLED PROPERLY BY
                                ;       THE VARIOUS TAPE MOTION COMMANDS.  THE FOLLOWING TEST SEQUENCE
                                ;       IS PERFORMED:
                                ;
                                ;       1.  THE TAPE IS REWOUND.
                                ;
                                ;       2.  WRITE DATA COMMANDS ARE REPEATEDLY ISSUED UNTIL TAPE
                                ;           STATUS ALERT TERMINATION IS SEEN WITH EOT=1.  ERRORS
                                ;           OTHER THAN OCCASIONAL CORRECTABLE OR UNCORRECTABLE DATA
                                ;           ERRORS CAUSE A FATAL ERROR REPORT.  RECORDS WITH DATA
                                ;           ERRORS ARE RETRIED, SO THE TAPE ENDS UP WITH GOOD DATA.
                                ;
                                ;       3.  ANOTHER WRITE DATA COMMAND IS ISSUED, AND IT IS CHECKED
                                ;           THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
                                ;
                                ;       4.  A WRITE TAPE MARK COMMAND IS ISSUED, AND IT IS CHECKED
                                ;           THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
                                ;
                                ;       5.  A SKIP TAPE MARKS REVERSE COMMAND IS ISSUED, AND IT IS
                                ;           CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH
                                ;           EOT=1 AND TMK=1.
                                ;
                                ;       6.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
                                ;           1, IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT
                                ;           TERMINATION OCCURS, WITH EOT=1 AND TMK=1.
                                ;
                                ;       7.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
                                ;           1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
                                ;           OCCURS, WITH EOT=1.
                                ;
                                ;       8.  A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
```

```
7050                                    ;               1. IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
7051                                    ;                  OCCURS, WITH EOT=1.
7052                                    ;
7053                                    ;            9.  A READ REVERSE COMMAND IS ISSUED, AND IT IS CHECKED
7054                                    ;                THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
7055                                    ;
7056                                    ;           10. A READ FORWARD COMMAND IS  SSUED, AND IT IS CHECKED
7057                                    ;                THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
7058                                    ;
7059                                    ;           11. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
7060                                    ;                3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
7061                                    ;                OCCURS. WITH EOT=0.
7062                                    ;
7063                                    ;           12. A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
7064                                    ;                3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
7065                                    ;                OCCURS, WITH EOT=1.
7066                                    ;
7067                                    ;           13. A SKIP FILE MARKS REVERSE COMMAND IS ISSUED, WHICH
7068                                    ;                SHOULD SKIP ALL THE WAY TO BOT, AND IT IS CHECKED THAT
7069                                    ;                TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=0,
7070                                    ;                BOT=1, AND RIB=1.
7071                                    ;
7072                                    ;
7073                                    ;
7074                                    ;
7075                                    ;
7076
7077 053040                             T34LOOP:
```

```
                                        ;+
                                        ;
                                        ;TEST 5, SUBTEST 1
                                        ;
                                        ;VERIFIES THAT WRITING OVER THE END-OF-TAPE (EOT)
                                        ;MARKER CAUSES TAPE STATUS ALERT TERMINATION. IF THE
                                        ;TAPE TRANSPORT DOES NOT RECOGNIZE THE EOT MARKER, THE
                                        ;TAPE WILL RUN OFF THE END OF THE REEL, CAUSING THE
                                        ;PROGRAM SEQUENCE TO BE ABORTED WITH A FATAL ERROR
                                        ;INDICATION. IN THIS CASE, CORRECTIVE MAINTENANCE
                                        ;MUST BE PERFORMED USING THE TRANSPORT'S BUILT-IN
                                        ;MAINTENANCE ROUTINE AVAILIABLE VIA THE FRONT PANEL.
                                        ;IF THE CONTROLLER DOES NOT RECOGNIZE THE EOT, THE
                                        ;TRANSPORT WILL FAULT BUT THE TAPE WILL NOT RUN OFF
                                        ;THE END OF THE REEL BUT THE TRANSPORT MUST BE
                                        ;MANUALLY PLACED BACK ON-LINE TO BE USABLE. THIS IS A
                                        ;FATAL DIAGNOSTIC ERROR.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-

053040                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
053040                                                                                  T5.1:
053040  104402                                                                                  TRAP    C$BSUB
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;*****************************************************************
                                        ;
                                        ;       SPECIAL SOFTWARE PARAMETER CHECK TO REDUCE THE MTTR OF THE
                                        ;       DRIVE I.E. SKIPS THIS SUBTEST IF SELECTED
                                        ;
                                        ;*****************************************************************
                                        ;
                                        ;
                                        ;
053042  005737  002140                          TST     EOTSEL                  ;CHECK SWITCH FOR PARAMETER
053046  001402                                  BEQ     5$                      ;BR, IF OPTION NOT SELECTED
053050  000137  055372                          JMP     600$                    ;BR, NO EOT TEST SELECTED
053054                                  5$:
                                        ;
                                        ;
                                        ;
                                        ;*****************************************************************
                                        ;
                                        ;       SET UP THE PACKET BUFFERS AND WAIT LONG TIME FOR SSR
                                        ;       THEN ISSUE A SOFT INITIALIZE
                                        ;
                                        ;*****************************************************************
                                        ;
053054  004737  057726                          JSR     PC,T34REST              ;SET COMMAND PACKET
053060  004737  060164                          JSR     PC,T34RT3               ;RESTORE PACKET
053064  004737  060122                          JSR     PC,T34RT2               ;SET UP OTHER COMMAND PACKET
053070  012737  176750  055564                  MOV     #65000.,T34DLY          ;SET UP COUNTER
```

```
053076  004737  016650          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
053102  103433                          BCS     20$                     ;BR IF INIT WAS OK
053104                                  DELAY   250                     ;DELAY A WHILE
053104  012727  000250                                                          MOV     #250,(PC)+
053110  000000                                                                  .WORD   0
053112  013727  002116                                                          MOV     L$DLY,(PC)+
053116  000000                                                                  .WORD   0
053120  005367  177772                                                          DEC     -6(PC)
053124  001375                                                                  BNE     .-4
053126  005367  177756                                                          DEC     -22(PC)
053132  001367                                                                  BNE     .-20
053134  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
053140  032701  000200                  BIT     #SSR,R1                 ;CHECK FOR SSR SET
053144  001012                          BNE     20$                     ;BR, WHEN SSR IS SET
053146  005337  055564                  DEC     T34DLY                  ;BUMP COUNTER DOWN
053152  001351                          BNE     10$                     ;BR, IF MORE DELAY REQUIRED
053154  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
053160  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
053162                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
053162  104455                                                                  TRAP    C$ERDF
053164  000765                                                                  .WORD   501
053166  003554                                                                  .WORD   SFIERR
053170  011666                                                                  .WORD   SFIMSG
053172                          20$:    CKLOOP                          ;LOOP IF SELECTED
053172  104406                                                                  TRAP    C$CLP1

                                ;
                                ;*********************************************************************
                                ;
                                ;       ISSUE A WRITE CHARACTERISTICS COMMAND TO CONTROLLER
                                ;
                                ;*********************************************************************
                                ;
053174  012704  055420                  MOV     #T34PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
053200  004737  010332                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
053204  103407                          BCS     30$                     ;BR, IF COMMAND ISSUED OK
053206  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
053212  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
053214                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
053214  104456                                                                  TRAP    C$ERHRD
053216  000766                                                                  .WORD   502
053220  004760                                                                  .WORD   WRTMSG
053222  011666                                                                  .WORD   SFIMSG
053224                          30$:    CKLOOP                          ;LOOP IF SELECTED
053224  104406                                                                  TRAP    C$CLP1
                                ;
                                ;*********************************************************************
                                ;
                                ;       ISSUE A REWIND COMMAND
                                ;
                                ;*********************************************************************
                                ;
053226  004737  010434                  JSR     PC,REWIND               ;REWIND CALL
053232  103411                          BCS     35$                     ;BR, IF TSSR IS OK (GOOD)
053234  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
053240  010004                          MOV     R0,R4                   ;SET UP PACKET
```

```
053242  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
053246                                  ERRHRD  ERRNO,T34RWN,PKTSSR     ;TSSR IS INCORRECT AFTER REWIND
053246  104456                                                                          TRAP    C$ERHRD
053250  000767                                                                          .WORD   503
053252  057246                                                                          .WORD   T34RWN
053254  011700                                                                          .WORD   PKTSSR
053256                          35$:    CKLOOP                          ;LOOP IF SELECTED
053256  104406                                                                          TRAP    C$CLP1
                                ;
                                ;*********************************************************************
                                ;
                                ;       ISSUE A WRITE COMMAND, CHECK FOR ERRORS, THIS IS SO THAT THE
                                ;       DRIVE WILL NOT JUST HANG IF AN ERROR OCCURS.
                                ;
                                ;*********************************************************************
                                ;
053260  012737  140005  055550          MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
053266  013737  003076  055552          MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
053274  012737  066540  055556          MOV     #28000.,T34SZ           ;SET UP BUFFER SIZE (INC # OF BYTES)
053302  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
053306  010465  177776          36$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
053312  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
053316  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
053322  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
053326  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
053330  001407                          BEQ     39$                     ;BR, IF ALL IS WELL NO PROBLEMS
053332  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
053336                                  ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE
053336  104457                                                                          TRAP    C$ERSOFT
053340  000770                                                                          .WORD   504
053342  005015                                                                          .WORD   WRTERR
053344  011700                                                                          .WORD   PKTSSR
053346  000757                          BR      36$                     ;BR, TO DO MORE CONTROLLED WRITES
053350                          39$:    CKLOOP                          ;LOOP ON ERROR IF SELECTED
053350  104406                                                                          TRAP    C$CLP1
                                ;
                                ;*********************************************************************
                                ;
                                ;       ISSUE A WRITE COMMAND, KEEP GOING UNTIL TAPE STATUS ALERT
                                ;
                                ;*********************************************************************
                                ;
053352  012737  140005  055550          MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
053360  012703  176750                  MOV     #65000.,R3              ;SET MAX NUMBER OF WRITES
053364  013737  003076  055552          MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
053372  012737  066540  055556          MOV     #28000.,T34SZ           ;SET UP BUFFER SIZE (INC # OF BYTES)
053400  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
053404  010465  177776          40$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
053410  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
053414  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
053420  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
053424  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
053426  001010                          BNE     50$                     ;BR, IT MIGHT BE END OF TAPE
053430  005303                          DEC     R3                      ;DEC RECORD COUNTER
053432  001364                          BNE     40$                     ;BR, IF MORE TO GO
```

```
053434  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
053440                                  ERRDF   ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
053440  104455                                                                                  TRAP    C$ERDF
053442  000771                                                                                  .WORD   505
055444  057057                                                                                  .WORD   T34ET
053446  011700                                                                                  .WORD   PKTSSR
                                ;
                                ;*****************************************************************
                                ;
                                ;       HAVE TAPE STATUS ALERT, NOW CHECK FOR EOT, IF NEITHER KEEP GOING
                                ;
                                ;*****************************************************************
                                ;
053450                          50$:
053450  022701  100210                  CMP     #100210,R1              ;CHECK FOR UNCORRECTABLE ERROR
053454  001003                          BNE     55$                     ;BR, IF IT WASN'T UNCORR.
053456  004737  060020                  JSR     PC,EWCHK                ;CHECK FOR EARLY WARNING
053462  103750                          BCS     40$                     ;BR, IF EARLY WARNING FOUND
053464  032701  000004          55$:    BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
053470  001001                          BNE     60$                     ;BR, IF SET
053472  000744                          BR      40$                     ;KEEP GOING
053474  013701  055446          60$:    MOV     T34BFR+6,R1             ;PICK UP XSTO
053500  010102                          MOV     R1,R2                   ;SET UP EXPECTED
053502  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
053506  020102                          CMP     R1,R2                   ;WAS THE BIT ON
053510  001402                          BEQ     80$                     ;BR, IF EOT WAS FOUND
053512  000137  053404                  JMP     40$                     ;KEEP LOOKING
053516                          80$:    CKLOOP                          ;LOOP IF SELECTED
053516  104406                                                                                  TRAP    C$CLP1
                                ;
                                ;*****************************************************************
                                ;
                                ;       ISSUE ONE MORE WRITE AFTER EOT DETECTED
                                ;
                                ;*****************************************************************
                                ;
053520  012737  140005  055550          MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
053526  013737  003076  055552          MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
053534  012737  066540  055556          MOV     #28000.,T34SZ           ;SET UP BUFFER SIZE (INC # OF BYTES)
053542  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
053546  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
053552  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
053556  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
053562  012702  100204                  MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
053566  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
053570  001406                          BEQ     90$                     ;BR, IF THEY ARE OK
053572  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
053576                                  ERRHRD  ERRNO,T34ET2,PKTSSR     ;WRITE TAPE AT EOT FAILED TO SET TSA
053576  104456                                                                                  TRAP    C$ERHRD
053600  000772                                                                                  .WORD   506
053602  056430                                                                                  .WORD   T34ET2
053604  011700                                                                                  .WORD   PKTSSR
053606                          90$:    CKLOOP                          ;LOOP IF SELECTED
053606  104406                                                                                  TRAP    C$CLP1
                                ;
                                ;*****************************************************************
                                ;
```

```
                                        ;       CHECK TO BE SURE EOT IS STILL SET, IT SHOULD BE
                                        ;
                                        ;*******************************************************************
                                        ;
053610  013701  055446                          MOV     T34BFR+6,R1             ;PICK UP XSTO
053614  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
053616  052702  000001                          BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
053622  020102                                  CMP     R1,R2                   ;WAS THE BIT ON
053624  001406                                  BEQ     100$                    ;BR, IF EOT WAS FOUND
053626  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
053632                                          ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
053632  104456                                                                                          TRAP    C$ERHRD
053634  000773                                                                                          .WORD   507
053636  056516                                                                                          .WORD   T34ETN
053640  016350                                                                                          .WORD   EXPREC
053642                                  100$:   CKLOOP                          ;LOOP IF SELECTED
053642  104406                                                                                          TRAP    C$CLP1
                                        ;
                                        ;*******************************************************************
                                        ;
                                        ;       NOW ISSUE A WRITE TAPE MARK, STILL BEYOND EOT
                                        ;
                                        ;*******************************************************************
                                        ;
053644  012737  140011  055550                  MOV     #140011,T34PK3          ;WRITE TAPE MARK, ACK, CVC=1 COMMAND
053652  012704  055550                          MOV     #T34PK3,R4              ;R4 - POINTER TO PACKET
053656  010465  177776                          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
053662  004737  017124                          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
053666  016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
053672  012702  100204                          MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
053676  020102                                  CMP     R1,R2                   ;ARE THEY EQUAL
053700  001406                                  BEQ     110$                    ;BR, IF STATUS IS GOOD (OK)
053702  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
053706                                          ERRHRD  ERRNO,T34WTM,PKTSSR     ;WRITE TAPE MARK FAILED
053706  104456                                                                                          TRAP    C$ERHRD
053710  000774                                                                                          .WORD   508
053712  056541                                                                                          .WORD   T34WTM
053714  011700                                                                                          .WORD   PKTSSR
053716                                  110$:   CKLOOP                          ;LOOP IF SELECTED
053716  104406                                                                                          TRAP    C$CLP1
                                        ;
                                        ;*******************************************************************
                                        ;
                                        ;       NOW CHECK TO BE SURE EOT IS STILL SET
                                        ;
                                        ;*******************************************************************
                                        ;
053720  013701  055446                          MOV     T34BFR+6,R1             ;PICK UP XSTO
053724  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
053726  052702  000001                          BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
053732  020102                                  CMP     R1,R2                   ;WAS THE BIT ON
053734  001406                                  BEQ     120$                    ;BR, IF EOT WAS FOUND
053736  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
053742                                          ERRHRD  ERRNO,T34ETO,EXPREC     ;EOT BIT (XSTO) NOT SET
053742  104456                                                                                          TRAP    C$ERHRD
053744  000775                                                                                          .WORD   509
053746  055764                                                                                          .WORD   T34ETO
```

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     053750  016350                                                                    .WORD   EXPREC
7338 053752                          120$:   CKLOOP                          ;LOOP IF SELECTED
     053752  104406                                                                    TRAP    C$CLP1
7339                                 ;
7340                                 ;*********************************************************************
7341                                 ;
7342                                 ;       NOW ISSUE A SKIP TAPE MARK REVERSE RIGHT BACK INTO THE JUST WRITTEN TM
7343                                 ;
7344                                 ;*********************************************************************
7345                                 ;
7346 053754  012737  141410  055550          MOV     #141410,T34PK3          ;SKIP TAPE MARK REVERSE ACK,CVC=1 COMMAND
7347 053762  012737  000001  055552          MOV     #1,T34WB                ;SET NUMBER (1) OF TMS TO SKIP
7348 053770  012704  055550                  MOV     #T34PK3,R4              ;R4 - POINTER TO PACKET
7349 053774  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7350 054000  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7351 054004  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7352 054010  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7353 054014  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7354 054016  001406                          BEQ     130$                    ;BR. IF STATUS IS GOOD (OK)
7355 054020  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7359 054024                                  ERRHRD  ERRNO,T34STM,PKTSSR     ;SKIP TAPE MARK REVERSE FAILED
     054024  104456                                                                    TRAP    C$ERHRD
     054026  000776                                                                    .WORD   510
     054030  057325                                                                    .WORD   T34STM
     054032  011700                                                                    .WORD   PKTSSR
7360 054034                          130$:   CKLOOP                          ;LOOP IF SELECTED
     054034  104406                                                                    TRAP    C$CLP1
7361                                 ;
7362                                 ;*********************************************************************
7363                                 ;
7364                                 ;       EOT SHOULD STILL BE SET
7365                                 ;
7366                                 ;*********************************************************************
7367                                 ;
7368 054036  013701  055446                  MOV     T34BFR+6,R1             ;PICK UP XSTO
7369 054042  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7370 054044  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7371 054050  020102                          CMP     R1,R2                   ;WAS THE BIT ON
7372 054052  001406                          BEQ     140$                    ;BR. IF EOT WAS FOUND
7373 054054  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7377 054060                                  ERRHRD  ERRNO,T34STE,EXPREC     ;EOT BIT (XSTO) NOT SET
     054060  104456                                                                    TRAP    C$ERHRD
     054062  000777                                                                    .WORD   511
     054064  057421                                                                    .WORD   T34STE
     054066  016350                                                                    .WORD   EXPREC
7378 054070                          140$:   CKLOOP                          ;LOOP IF SELECTED
     054070  104406                                                                    TRAP    C$CLP1
7379                                 ;
7380                                 ;*********************************************************************
7381                                 ;
7382                                 ;       THE TMK BIT SHOULD BE SET ALSO
7383                                 ;
7384                                 ;*********************************************************************
7385                                 ;
7386 054072  013701  055446                  MOV     T34BFR+6,R1             ;PICK UP XSTO
7387 054076  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7388 054100  052702  100000                  BIS     #BIT15,R2               ;SET THE TMK BIT ON IN EXPECTED
```

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054104  020102                          CMP     R1,R2                   ;WAS THE BIT ON
054106  001406                          BEQ     150$                    ;BR, IF TMK WAS FOUND
054110  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
054114                                  ERRHRD  ERRNO,T34TMK,EXPREC     ;TMK (XSTO) NOT SET
054114  104456                                                                          TRAP    C$ERHRD
054116  001000                                                                          .WORD   512
054120  056751                                                                          .WORD   T34TMK
054122  016350                                                                          .WORD   EXPREC
054124                          150$:   CKLOOP                          ;LOOP IF SELECTED
054124  104406                                                                          TRAP    C$CLP1
                                ;
                                ;*******************************************************************
                                ;
                                ;       ISSUE SPACE RECORDS REVERSE FOR 1 RECORD, STILL BEYOND EOT
                                ;
                                ;*******************************************************************
                                ;
054126  012737  140410  055550          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
054134  012737  000001  055552          MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
054142  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
054146  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
054152  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
054156  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
054162  012702  100204                  MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
054166  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
054170  001006                          BNE     160$                    ;BR, IT MIGHT BE END OF TAPE
054172  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
054176                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE RECORDS REVERSE FAILED
054176  104456                                                                          TRAP    C$ERHRD
054200  001001                                                                          .WORD   513
054202  055676                                                                          .WORD   T34POS
054204  011700                                                                          .WORD   PKTSSR
054206                          160$:   CKLOOP                          ;LOOP IF SELECTED
054206  104406                                                                          TRAP    C$CLP1
                                ;
                                ;*******************************************************************
                                ;
                                ;       EOT SHOULD STILL BE SET
                                ;
                                ;*******************************************************************
                                ;
054210  013701  055446                  MOV     T34BFR+6,R1             ;PICK UP XSTO
054214  010102                          MOV     R1,R2                   ;SET UP EXPECTED
054216  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
054222  020102                          CMP     R1,R2                   ;WAS THE BIT ON
054224  001406                          BEQ     163$                    ;BR, IF EOT WAS FOUND
054226  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
054232                                  ERRHRD  ERRNO,T34ETS,EXPREC     ;EOT BIT (XSTO) NOT SET
054232  104456                                                                          TRAP    C$ERHRD
054234  001002                                                                          .WORD   514
054236  056601                                                                          .WORD   T34ETS
054240  016350                                                                          .WORD   EXPREC
054242                          163$:   CKLOOP                          ;LOOP IF SELECTED
054242  104406                                                                          TRAP    C$CLP1
                                ;
                                ;*******************************************************************
                                ;
```

```
                                        ;       HOWEVER, THE TMK BIT SHOULD NOW BE CLEAR
                                        ;
                                        ;*******************************************************************
                                        ;
054244  013701  055446                          MOV     T34BFR+6,R1             ;PICK UP XSTO
054250  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
054252  042702  100000                          BIC     ØBIT15,R2               ;CLEAR THE TMK BIT ON IN EXPECTED
054256  020102                                  CMP     R1,R2                   ;WAS THE BIT ON
054260  001406                                  BEQ     165$                    ;BR, IF TMK WAS FOUND
054262  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
054266                                          ERRHRD  ERRNO,T34TMN,EXPREC     ;COULD NOT CLEAR TMK (ZSTO)
054266  104456                                                                                          TRAP    C$ERHRD
054270  001003                                                                                          .WORD   515
054272  057515                                                                                          .WORD   T34TMN
054274  016350                                                                                          .WORD   EXPREC
054276                                  165$:   CKLOOP                          ;LOOP IF SELECTED
054276  104406                                                                                          TRAP    C$CLP1
                                        ;
                                        ;*******************************************************************
                                        ;
                                        ;       NOW SPACE 3 RECORDS IN REVERSE
                                        ;
                                        ;*******************************************************************
                                        ;
054300  012737  140410  055550                  MOV     Ø140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
054306  012737  000003  055552                  MOV     Ø3,T34WB                ;SPACE THREE RECORD REVERSE
054314  012704  055550                          MOV     ØT34PK3,R4              ;R4 = POINTER TO PACKET
054320  010465  177776                          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
054324  004737  017124                          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
054330  016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
054334  012702  000200                          MOV     ØSSR,R2                 ;SET UP EXPECTED
054340  020102                                  CMP     R1,R2                   ;ARE THEY EQUAL
054342  001406                                  BEQ     167$                    ;BR, IT MIGHT BE END OF TAPE
054344  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
054350                                          ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE RECORDS COMMAND FAILED
054350  104456                                                                                          TRAP    C$ERHRD
054352  001004                                                                                          .WORD   516
054354  055676                                                                                          .WORD   T34POS
054356  011700                                                                                          .WORD   PKTSSR
054360                                  167$:   CKLOOP                          ;LOOP IF SELECTED
054360  104406                                                                                          TRAP    C$CLP1
                                        ;
                                        ;*******************************************************************
                                        ;
                                        ;       NOW THE EOT BIT SHOULD BE CLEAR
                                        ;
                                        ;*******************************************************************
                                        ;
054362  013701  055446                          MOV     T34BFR+6,R1             ;PICK UP XSTO
054366  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
054370  042702  000001                          BIC     ØBIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
054374  020102                                  CMP     R1,R2                   ;WAS THE BIT OFF
054376  001404                                  BEQ     170$                    ;BR, IF EOT WAS FOUND
054400                                          ERRHRD  ERRNO,T34ETC,PKTSSR     ;UNABLE TO CLEAR EOT INDICATION
054400  104456                                                                                          TRAP    C$ERHRD
054402  001005                                                                                          .WORD   517
054404  056155                                                                                          .WORD   T34ETC
```

```
     054406  011700                                                                    .WORD   PKTSSR
7493
7494 054410                          170$:   CKLOOP                          ;LOOP IF SELECTED
     054410  104406                                                                    TRAP    C$CLP1
7495                                 ;
7496                                 ;*************************************************************************
7497                                 ;
7498                                 ;       NOW SPACE 4 RECORDS FORWARD, ONCE AGAIN OVER EOT MARKER
7499                                 ;
7500                                 ;*************************************************************************
7501                                 ;
7502 054412  012737  140010  055550          MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1
7503 054420  012737  000004  055552          MOV     #4,T34WB                ;SPACE FOUR RECORDS
7504 054426  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7505 054432  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7506 054436  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7507 054442  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7508 054446  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7509 054452  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7510 054454  001406                          BEQ     190$                    ;BR, IT MIGHT BE END OF TAPE
7511 054456  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7515 054462                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE RECORDS COMMAND FAILED
     054462  104456                                                                    TRAP    C$ERHRD
     054464  001006                                                                    .WORD   518
     054466  055676                                                                    .WORD   T34POS
     054470  011700                                                                    .WORD   PKTSSR
7516 054472                          190$:   CKLOOP                          ;LOOP IF SELECTED
     054472  104406                                                                    TRAP    C$CLP1
7517                                 ;
7518                                 ;*************************************************************************
7519                                 ;
7520                                 ;       ONCE AGAIN THE EOT INDICATION SHOULD BE SET IN XSTATO
7521                                 ;
7522                                 ;*************************************************************************
7523                                 ;
7524 054474  013701  055446                  MOV     T34BFR+6,R1             ;PICK UP XSTO
7525 054500  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7526 054502  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7527 054506  020102                          CMP     R1,R2                   ;WAS THE BIT ON
7528 054510  001406                          BEQ     200$                    ;BR, IF EOT WAS FOUND
7529 054512  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7533 054516                                  ERRHRD  ERRNO,T34ETS,EXPREC     ;EOT BIT (XSTO) NOT SET
     054516  104456                                                                    TRAP    C$ERHRD
     054520  001007                                                                    .WORD   519
     054522  056601                                                                    .WORD   T34ETS
     054524  016350                                                                    .WORD   EXPREC
7534 054526                          200$:   CKLOOP                          ;LOOP IF SELECTED
     054526  104406                                                                    TRAP    C$CLP1
7535                                 ;
7536                                 ;*************************************************************************
7537                                 ;
7538                                 ;       NOW ISSUE A READ REVERSE COMMAND
7539                                 ;
7540                                 ;*************************************************************************
7541                                 ;
7542 054530  012737  140401  055550          MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
7543 054536  013737  003076  055552          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
```

```
054544  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
054550  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
054554  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
054560  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
054564  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
054570  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
054572  001406                          BEQ     2051                    ;BR, ONLY SSR IS SET
054574  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
054600                                  ERRHRD  ERRNO,T34RRE,PKTSSR     ;READ REVERSE COMMAND FAILED
        054600  104456                                                                          TRAP    C$ERHRD
        054602  001010                                                                          .WORD   520
        054604  056054                                                                          .WORD   T34RRE
        054606  011700                                                                          .WORD   PKTSSR
054610                          2051:   CKLOOP                          ;LOOP IF SELECTED
        054610  104406                                                                          TRAP    C$CLP1
                                        ;
                                        ;*******************************************************************
                                        ;
                                        ;       NOW ISSUE A READ REVERSE COMMAND
                                        ;
                                        ;*******************************************************************
054612  012737  140401  055550           MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
054620  013737  003076  055552           MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
054626  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
054632  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
054636  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
054642  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
054646  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
054652  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
054654  001406                          BEQ     2101                    ;BR, IT MIGHT BE END OF TAPE
054656  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
054662                                  ERRHRD  ERRNO,T34RRE,PKTSSR     ;SECOND READ REVERSE COMMAND FAILED
        054662  104456                                                                          TRAP    C$ERHRD
        054664  001011                                                                          .WORD   521
        054666  056054                                                                          .WORD   T34RRE
        054670  011700                                                                          .WORD   PKTSSR
054672                          2101:   CKLOOP                          ;LOOP IF SELECTED
        054672  104406                                                                          TRAP    C$CLP1
                                        ;
                                        ;*******************************************************************
                                        ;
                                        ;       NOW ISSUE A READ COMMAND
                                        ;
                                        ;*******************************************************************
054674  012737  140001  055550           MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
054702  013737  003076  055552           MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
054710  012737  066540  055556           MOV     #28000.,T34SZ           ;SET UP BUFFER SIZE (INC # OF BYTES)
054716  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
054722  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
054726  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
054732  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
054736  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
054742  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
054744  001406                          BEQ     2301                    ;BR, IT MIGHT BE END OF TAPE
054746  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
054752                                  ERRHRD  ERRNO,T34RRF,PKTSSR     ;READ FORWARD COMMAND FAILED
        054752  104456                                                                          TRAP    C$ERHRD
```

```
        054754  001012                                                                    .WORD   522
        054756  057600                                                                    .WORD   T34RRF
        054760  011700                                                                    .WORD   PKTSSR
   7599 054762                          230$:   CKLOOP                          ;LOOP IF SELECTED
        054762  104406                                                                    TRAP    C$CLP1
   7600 054764  012737  140001  055550          MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
   7601 054772  013737  003076  055552          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
   7602 055000  012737  066540  055556          MOV     #28000.,T34SZ           ;SET UP BUFFER SIZE (INC # OF BYTES)
   7603 055006  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
   7604 055012  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   7605 055016  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   7606 055022  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   7607 055026  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
   7608 055032  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
   7609 055034  001406                          BEQ     235$                    ;BR, IT MIGHT BE END OF TAPE
   7610 055036  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   7614 055042                                  ERRHRD  ERRNO,T34RRF,PKTSSR     ;SECOND READ FORWARD FAILED
        055042  104456                                                                    TRAP    C$ERHRD
        055044  001013                                                                    .WORD   523
        055046  057600                                                                    .WORD   T34RRF
        055050  011700                                                                    .WORD   PKTSSR
   7615 055052                          235$:   CKLOOP                          ;LOOP IF SELECTED
        055052  104406                                                                    TRAP    C$CLP1
   7616                                 ;
   7617                                 ;*****************************************************************
   7618                                 ;
   7619                                 ;       THE EOT BIT SHOULD HAVE REMAINED SET
   7620                                 ;
   7621                                 ;*****************************************************************
   7622                                 ;
   7623 055054  013701  055446                  MOV     T34BFR+6,R1             ;PICK UP XSTO
   7624 055060  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   7625 055062  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
   7626 055066  020102                          CMP     R1,R2                   ;WAS THE BIT ON
   7627 055070  001406                          BEQ     240$                    ;BR, IF EOT WAS FOUND
   7628 055072  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   7632 055076                                  ERRHRD  ERRNO,T34ETZ,EXPREC     ;EOT BIT (XSTO) NOT SET
        055076  104456                                                                    TRAP    C$ERHRD
        055100  001014                                                                    .WORD   524
        055102  056667                                                                    .WORD   T34ETZ
        055104  016350                                                                    .WORD   EXPREC
   7633 055106                          240$:   CKLOOP                          ;LOOP IF SELECTED
        055106  104406                                                                    TRAP    C$CLP1
   7634                                 ;
   7635                                 ;*****************************************************************
   7636                                 ;
   7637                                 ;       NOW ISSUE A SPACE RECORDS REVERSE FOR 5 RECORDS
   7638                                 ;
   7639                                 ;*****************************************************************
   7640                                 ;
   7641 055110  012737  140410  055550          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD.
   7642 055116  012737  000005  055552          MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
   7643 055124  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
   7644 055130  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   7645 055134  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   7646 055140  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   7647 055144  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
```

```
7648 055150  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7649 055152  001406                          BEQ     250$                    ;BR, IT MIGHT BE END OF TAPE
7650 055154  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7654 055160                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE 5 RECORDS REVERSE COMMAND FAILED
     055160  104456                                                                                  TRAP    C$ERHRD
     055162  001015                                                                                  .WORD   525
     055164  055676                                                                                  .WORD   T34POS
     055166  011700                                                                                  .WORD   PKTSSR
7655 055170                          250$:   CKLOOP                          ;LOOP IF SELECTED
     055170  104406                                                                                  TRAP    C$CLP1
7656                                 ;
7657                                 ;*****************************************************************
7658                                 ;
7659                                 ;       EOT SHOULD BE CLEAR AS WE ARE NOW IN FRONT OF EOT
7660                                 ;
7661                                 ;*****************************************************************
7662                                 ;
7663 055172  013701  055446                  MOV     T34BFR+6,R1             ;PICK UP XSTO
7664 055176  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7665 055200  042702  000001                  BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
7666 055204  020102                          CMP     R1,R2                   ;WAS THE BIT ON
7667 055206  001406                          BEQ     260$                    ;BR, IF EOT WAS FOUND
7668 055210  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7672 055214                                  ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
     055214  104456                                                                                  TRAP    C$ERHRD
     055216  001016                                                                                  .WORD   526
     055220  056155                                                                                  .WORD   T34ETC
     055222  015350                                                                                  .WORD   EXPREC
7673 055224                          260$:   CKLOOP                          ;LOOP IF SELECTED
     055224  104406                                                                                  TRAP    C$CLP1
7674                                 ;
7675                                 ;*****************************************************************
7676                                 ;
7677                                 ;       NOW SPACE FORWARD 5 RECORDS AGAIN
7678                                 ;
7679                                 ;*****************************************************************
7680                                 ;
7681 055226  012737  140010  055550          MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1 CMD.
7682 055234  012737  000005  055552          MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
7683 055242  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7684 055246  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7685 055252  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7686 055256  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7687 055262  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7688 055266  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7689 055270  001406                          BEQ     270$                    ;BR, IT MIGHT BE END OF TAPE
7690 055272  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7694 055276                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE RECORDS FORWARD COMMAND FAILED
     055276  104456                                                                                  TRAP    C$ERHRD
     055300  001017                                                                                  .WORD   527
     055302  055676                                                                                  .WORD   T34POS
     055304  011700                                                                                  .WORD   PKTSSR
7695 055306                          270$:   CKLOOP                          ;LOOP IF SELECTED
     055306  104406                                                                                  TRAP    C$CLP1
7696                                 ;
7697                                 ;*****************************************************************
7698                                 ;
```

```
                                        ;       EOT SHOULD BE SET AGAIN
                                        ;
                                        ;*******************************************************************
                                        ;
055310  013701  055446                          MOV     T34BFR+6,R1             ;PICK UP XSTO
055314  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
055316  052702  000001                          BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
055322  020102                                  CMP     R1,R2                   ;WAS THE BIT ON
055324  001404                                  BEQ     280$                    ;BR, IF EOT WAS FOUND
055326                                          ERRHRD  ERRNO,T34ETS,PKTSSR     ;EOT FAILED TO SET AFTER SPACE CMD.
055326  104456                                                                                  TRAP    C$ERHRD
055330  001020                                                                                  .WORD   528
055332  056601                                                                                  .WORD   T34ETS
055334  011700                                                                                  .WORD   PKTSSR
                                        280$:   CKLOOP                          ;LOOP IF SELECTED
055336                                                                                          TRAP    C$CLP1
055336  104406
                                        ;
                                        ;*******************************************************************
                                        ;
                                        ;       ISSUE A REWIND COMMAND
                                        ;
                                        ;*******************************************************************
                                        ;
055340  004737  010434                          JSR     PC,REWIND               ;REWIND CALL
055344  103411                                  BCS     320$                    ;BR, IF TSSR IS OK (GOOD)
055346  016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR
055352  010004                                  MOV     R0,R4                   ;SET UP PACKET
055354  004737  020106                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
055360                                          ERRHRD  ERRNO,T34RWN,PKTSSR     ;TSSR IS INCORRECT AFTER REWIND
055360  104456                                                                                  TRAP    C$ERHRD
055362  001021                                                                                  .WORD   529
055364  057246                                                                                  .WORD   T34RWN
055366  011700                                                                                  .WORD   PKTSSR
                                        320$:   CKLOOP                          ;LOOP IF SELECTED
055370                                                                                          TRAP    C$CLP1
055370  104406
                                        600$:
055372                                          ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
055372                                                                                  L10060:
055372  104403                                                                                  TRAP    C$ESUB
055374  004737  017362                          JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
055400  103002                                  BCC     163$                    ;BR, IF NO LOOP REQUIRED
055402  000137  053040                          JMP     T34LOOP                 ;EXECUTE AGAIN
055406                                  163$:   EXIT    TST                     ;ALL DONE THIS TEST
055406  104432                                                                                  TRAP    C$EXIT
055410  002600                                                                                  .WORD   L10057
```

```
                                        ;+
                                        ;LOCAL STORAGE FOR THIS TEST
                                        ;-
055412                                          .BLKB   10-<.-TUV2A&7>
055420                                  T34PACKET:                              ;COMMAND PACKET FOR TEST
055420  100004                                  .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH ACK
055422  055430                                  .WORD   T34DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
055424  000000                                  .WORD   0
055426  000010                                  .WORD   8.                      ;STARTING VALUE OF BLOCK SIZE
055430                                  T34DATA:                                ;CHARACTERISTICS DATA BLOCK
055430  055440                                  .WORD   T34BFR                  ;ADDRESS OF MESSAGE BUFFER
055432  000000                                  .WORD   0
055434  000012                                  .WORD   10.                     ;LENGTH OF MESSAGE BUFFER
055436  000000                                  .WORD   0
055440                                  T34BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                        ;
                                        ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                        ;
055522                                          .BLKB   10-<.-TUV2A&7>
055530                                  T34PK2:
055530  100006                                  .WORD   100006                  ;WRITE SUB SYS MEM COMMAND, AND ACK
055532  055570                                  .WORD   T34BF2                  ;ADDRESS OF SELECT BLOCK DATA
055534  000000                                  .WORD   0
055536  000006                                  .WORD   6.                      ;SIZE OF DATA PACKET

055540                                          .BLKB   10-<.-TUV2A&7>
055550                                  T34PK3:
055550  100005                                  .WORD   100005                  ;WRITE COMMAND,  AND ACK
055552                                  T34RB:
055552  000000                          T34WB:  .WORD   0                       ;ADDRESS OF WRITE/READ BUFFER
055554  000000                                  .WORD   0
055556  000000                          T34SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                                .EVEN
                                        ;
055560  000000                          T34RSZ: .WORD   0                       ;LARGEST TAPE RECORD IN BYTES
055562  000000                          T34CNT: .WORD   0                       ;TAPE RECORD COUNTER
055564  000000                          T34DLY: .WORD   0                       ;DELAY COUNTER

055566  000000                          T34TRK: .WORD   0                       ;HOLD TRACK NUMBER
                                        ;
                                        ;
055570                                  T34BF2:
055570      010                         T34BS0: .BYTE   10                      ;BSELO AREA
055571      200                         T34BS1: .BYTE   200                     ;BSEL1 AREA
055572  000000                          T34S2:  .WORD   0                       ;SEL 2 AREA
055574  000000                          T34S3:  .WORD   0                       ;DATA AREA
                                        ;
                                        ;
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES

055576  100005                          T34WD:  .WORD   100005                  ;WRITE DATA (NEXT)
055600  100405                          T34WDR: .WORD   100405                  ;WRITE DATA RETRY
055602  102005                          T34CON: .WORD   102005                  ;WRITE CONTINOUS
055604  177777                                  .WORD   177777                  ;END OF DATA
```

```
                                        ;+
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-

055606    045    116    045   EWMSG:   .ASCIZ  '#N#A Early Warning Indicator Just Received, Track = #D2'
055676    124    123    123   T34POS:  .ASCIZ  'TSSR Incorrect After Position (SPACE RECORDS) Command'
055764    127    122    111   T34ETO:  .ASCIZ  'WRITE TAPE MARK Beyond EOT Failed To Set EOT Bit (XSTO)'
056054    122    105    101   T34RRE:  .ASCIZ  'READ REVERSE Command At EOT Didn''t Give Normal Termination (TSSR)'
056155    125    156    141   T34ETC:  .ASCIZ  'Unable To Clear EOT Indication, (XSTO) Bit 0'
056232    123    153    151   T34BOT:  .ASCIZ  'Skip File Mark Reverse (over entire tape) Failed To Set BOT (XSTO) Bit'
056341    127    122    111   T34WTM:  .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set Tape Status Alert'
056430    127    122    111   T34ET2:  .ASCIZ  'WRITE DATA Beyond EOT Failed To Set Tape Status Alert'
056516    127    122    111   T34ETN:  .ASCIZ  'WRITE DATA Beyond EOT Failed To Set EOT Bit (XSTO)'
056601    123    120    101   T34ETS:  .ASCIZ  'SPACE RECORDS Beyond EOT Failed To Set EOT Bit (XSTO)'
056667    122    105    101   T34ETZ:  .ASCIZ  'READ DATA Beyond EOT Failed To Set EOT Bit (XSTO)'
056751    120    117    123   T34TMK:  .ASCIZ  'POSITION Command Beyond EOT Into A Tape Mark Failed To Set TMK (XSTO)'
057057    105    117    124   T34ET:   .ASCIZ  'EOT Not Found In 65000 3.5K Writes, (Use Shorter Tape)'
057146    127    122    111   T34EOT:  .ASCIZ  'WRITE DATA OVER EOT GAVE NO TAPE STATUS ALERT'

057224    117    160    145   TST34ID:         .ASCIZ  'Operations At EOT'
057246    124    123    123   T34RWN:  .ASCIZ  'TSSR Incorrect After Position (REWIND) Command'
057325    124    123    123   T34STM:  .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Beyond EOT Mark'
057421    105    117    124   T34STE:  .ASCIZ  'EOT (XSTO) Not Set After SKIP TAPE MARK REVERSE, Beyond EOT'
057515    125    156    141   T34TMN:  .ASCIZ  'Unable To Clear TMK (XSTO) Bit Using Space Command'
057600    124    123    123   T34RRF:  .ASCIZ  'TSSR Incorrect After READ FORWARD Command'
057652    124    123    123   T34WOL:  .ASCIZ  'TSSR Incorrect After SKIP FILE MARK REVERSE'
                                         .EVEN

                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

057726                                  T34REST:
057726                                           SAVREG                                  ;SAVE THE REGISTERS
057732  012701  055420                           MOV     #T34PACKET,R1                   ;START OF THE PACKET
057736  012721  100004                           MOV     #100004,(R1)+                   ;WRITE SUBSYSTEM MEM. WITH ACK
057742  012721  055430                           MOV     #T34DATA,(R1)+                  ;ADDRESS OF CHARAISTICS DATA BLOCK
057746  005021                                   CLR     (R1)+                           ;EXTENDED ADDRESS
057750  012721  000012                           MOV     #10.,(R1)+                      ;SIZE OF DATA BLOCK IN BYTES
057754  012721  055440                           MOV     #T34BFR,(R1)+                   ;ADDRESS OF MESSAGE BUFFER
057760  005021                                   CLR     (R1)+
057762  012721  000024                           MOV     #20.,(R1)+                      ;LENGTH OF MESSAGE BUFFER
057766  005021                                   CLR     (R1)+
057770  012711  000000                           MOV     #0,(R1)                         ;SELECT DRIVE ZERO
057774  012702  000030                           MOV     #24.,R2                         ;NUMBER OF LOCATIONS TO BE CLEARED
060000  012762  177777  055440  64$:             MOV     #177777,T34BFR(R2)              ;ALL ONES TO MESSAGE BUFFER
060006  005742                                   TST     -(R2)                           ;BUMP DOWN TO NEXT LOCATION
060010  020227  000000                           CMP     R2,#0                           ;R2 AT ZERO YET
060014  001371                                   BNE     64$                             ;KEEP GOING UNTIL DONE
060016  000207                                   RTS     PC                              ;RETURN

                                        ;
```

```
                                        ;       THIS SUBROUTINE CHECKS FOR EARLY WARNING SET AND IF SET
                                        ;       IT ISSUES A BACKSPACE AND AN ERASE TO GET TO THE NEXT TRACK
                                        ;
060020                                  EWCHK:
060020                                          SAVREG                          ;SAVE ALL REGISTERS ETC.
060024  013737  055450  055566                  MOV     T34BFR+10,T34TRK        ;READ XSTAT1 FOR EW
060032  032737  000010  055566                  BIT     #BIT3,T34TRK            ;WAS EW SET IN XSTAT1
060040  001424                                  BEQ     100$                    ;BR, IF IT WAS NOT
060042  012703  100001                          MOV     #100001,R3              ;PARAMETERS FOR SPACE ROUTINE
060046  004737  010134                          JSR     PC,SPACE                ;SPACE 1 RECORD REVERSE
060052  012704  060120                          MOV     #110$,R4                ;ADDRESS OF AN ERASE COMMAND
060056  010465  177776                          MOV     R4,TSDB(R5)             ;ISSUE THE ERASE COMMAND
060062  004737  017124                          JSR     PC,WAITF                ;WAIT FOR THE SSR BIT TO SET
060066  013702  055566                          MOV     T34TRK,R2               ;GET TRACK NUMBER
060072  006002                                  ROR     R2                      ;SHIFT OVER 4 BITS TO BIT0
060074  006002                                  ROR     R2                      ;SHIFT OVER 4 BITS TO BIT0
060076  006002                                  ROR     R2                      ;SHIFT OVER 4 BITS TO BIT0
060100  006002                                  ROR     R2                      ;SHIFT OVER 4 BITS TO BIT0
060102  042702  177760                          BIC     #177760,R2              ;ONLY FOUR BITS PASS
                                        ;
                                        ;       THIS MESSAGE USED TO PRINT EARLY WARNING MESSAGE. TRACK NINE
                                        ;       DID NOT ALWAYS GIVE INDICATION. THIS WAS BECAUSE IT WASN'T
                                        ;       ALWAYS DETECTED DURING A WRITE. SO MESSAGE REMOVED.
                                        ;
                                        ;       PRINTX  #EWMSG,R2               ;"JUST RECEIVED EARLY WARNING IND."
060106  000261                                  SEC                             ;SET THE CARRY BIT
060110  000401                                  BR      105$                    ;EXIT
060112  000241                          100$:   CLC                             ;CLEAR CARRY (NO EW FOUND)
060114  000207                          105$:   RTS     PC                      ;RETURN
060116                                          .BLKB   10 <.-TUV2A&7>
060120  140411                          110$:   .WORD   140411                  ;ERASE DATA, CVC=1, AND ACK COMMAND
060122                                  T34RT2:
060122                                          SAVREG                          ;SAVE THE REGISTERS
060126  012701  055530                          MOV     #T34PK2,R1              ;START OF THE PACKET
060132  012721  100006                          MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
060136  012721  055570                          MOV     #T34BF2,(R1)+           ;ADDRESS OF DATA BLOCK
060142  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
060144  012721  000006                          MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
060150  012701  055570                          MOV     #T34BF2,R1              ;POINT TO DATA SEL AREA
060154  005021                                  CLR     (R1)+
060156  005021                                  CLR     (R1)+
060160  005011                                  CLR     (R1)
060162  000207                                  RTS     PC                      ;RETURN
060164                                  T34RT3:
060164                                          SAVREG                          ;SAVE THE REGISTERS
060170  012701  055550                          MOV     #T34PK3,R1              ;START OF THE PACKET
060174  012721  100005                          MOV     #100005,(R1)+           ;WRITE  TAPE. WITH ACK
060200  005021                                  CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
060202  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
060204  005011                                  CLR     (R1)                    ;SIZE OF DATA BLOCK
060206  000207                                  RTS     PC                              ;RETURN
060210                                          ENDTST
060210                                                                                          L10057:
060210  104401                                                                                          TRAP    C$ETST
```

```
                                        .SBTTL  HARDWARE PARAMETER CODING SECTION

                                ;**
                                ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                ; WITH THE OPERATOR.
                                ;--
065010                                  BGNHRD
065010  000015                          .WORD L10061-L$HARD/2
065012                          L$HARD::

065012                                  GPRMA   HPM1,0,0,160000,177776,YES      ;GET TSBA/TSDB REGISTER ADDRESS.
065012  000031                          .WORD   T$CODE
065014  065044                          .WORD   HPM1
065016  160000                          .WORD   T$LOLIM
065020  177776                          .WORD   T$HILIM
065022                                  GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
065022  001031                          .WORD   T$CODE
065024  065073                          .WORD   HPM2
065026  000000                          .WORD   T$LOLIM
065030  000776                          .WORD   T$HILIM
065032                                  GPRMD   HPM3,4,0,340,0,7,YES            ;GET INTERRUPT PRIORITY.
065032  002032                          .WORD   T$CODE
065034  065117                          .WORD   HPM3
065036  000340                          .WORD   340
065040  000000                          .WORD   T$LOLIM
065042  000007                          .WORD   T$HILIM
065044                                  ENDHRD
                                        .EVEN
065044                          L10061:
065044     104     105     126  HPM1:   .ASCIZ  'DEVICE ADDRESS (TSSR) '
065073     111     116     124  HPM2:   .ASCIZ  'INTERRUPT VECTOR    '
065117     111     116     124  HPM3:   .ASCIZ  'INTERRUPT PRIORITY      '
                                        .EVEN
```

```
                                        .SBTTL  SOFTWARE PARAMETER CODING SECTION

                                ;++
                                ; THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                ; WITH THE OPERATOR.
                                ;--
065150                                  BGNSFT
065150  000011                          .WORD L10062-L$SOFT/2
065152                          L$SOFT::
065152                                  GPRML   SPM1,0,-1,YES                   ;GET RAM DUMP FLAG
065152  000130                          .WORD   T$CODE
065154  065174                          .WORD   SPM1
065156  177777                          .WORD   -1
065160                                  GPRML   SPM4,2,-1,YES                   ; GET ITERATION CONTROL.
065160  001130                          .WORD   T$CODE
065162  065240                          .WORD   SPM4
065164  177777                          .WORD   -1
065166                                  GPRML   SPM6,4,-1,YES                   ;GET EOT CHECK STATUS
065166  002130                          .WORD   T$CODE
065170  065270                          .WORD   SPM6
065172  177777                          .WORD   -1
065174                                  ENDSFT
                                        .EVEN
065174                          L10062:

065174  105     116     101     SPM1:   .ASCIZ  'ENABLE CONTROLLER RAM DUMP ON ERROR'
065240  111     116     110     SPM4:   .ASCIZ  'INHIBIT ITERATIONS     '

065270  111     116     110     SPM6:   .ASCIZ  'INHIBIT EOT CHECKING (REDUCES RUN TIME BY 22 MINUTES)'
                                        .EVEN
                                        .SBTTL  PATCH AREA
                                ;+
                                ;DISPATCH TABLE
                                ;
                                ; *** MOVE TO FRONT OF PROGRAM FOR RELEASE ***
                                ;-

065356                                  DISPATCH        TESTNO
065356  000005                          .WORD   5
065360                          L$DISPATCH::
065360  023644                          .WORD   T1
065362  032326                          .WORD   T2
065364  041322                          .WORD   T3
065366  046640                          .WORD   T4
065370  053000                          .WORD   T5

                                ;
                                ; FINALLY A GENEROUS PATCH AREA.
                                ;
                                ; AND AN ADJUSTMENT TO ACCOUNT FOR THE "LASTAD BIT7" HACK
                                ; DESCRIBED IN "SUPPRG.MEM" (FOR REV C).
                                ;
```

```
                                        PATCH::
065372                                  ;       .IF     NZ,.&377
                                        ;       .=.!377+1
                                        ;       .ENDC
065372                                          LASTAD          ;SET LAST USED ADDRESS.
                                                .EVEN
065372  065410                                  .WORD T$FREE
065374  000005                                  .WORD T$SIZE
065376                                  L$LAST::
                                                .SBTTL  HARD CODED P-TABLE
                                        ;++
                                        ;       DIAGNOSTIC IS PRE-PARAMETERIZED PER THIS TABLE
                                        ;--
065376                                          BGNSETUP        1
065376                                          BGNPTAB
065376  000000                                  .WORD   0
065400  000003                                  .WORD   L10065-./2-1
065402                                  L10063:
065402  172522                                  .WORD           172522
065404  000224                                  .WORD           224
065406  000240                                  .WORD           PRI05
065410                                          ENDPTAB
065410                                  L10065:
065410                                          ENDSETUP

        000001                                  .END
```

```
ADDSSR  011772 G
ADR     = 000020 G
ABTSS   006332
ASSEMB  = 000010
A1716   = 000003
BADDAT  003114 G
BADSSR  016554 G
BAR     = 174402
BENBSW  002176 G
BIF     = 040000
BIT0    = 000001 G
BIT00   = 000001 G
BIT01   = 000002 G
BIT02   = 000004 G
BIT03   = 000010 G
BIT04   = 000020 G
BIT05   = 000040 G
BIT06   = 000100 G
BIT07   = 000200 G
BIT08   = 000400 G
BIT09   = 001000 G
BIT1    = 000002 G
BIT10   = 002000 G
BIT11   = 004000 G
BIT12   = 010000 G
BIT13   = 020000 G
BIT14   = 040000 G
BIT15   = 100000 G
BIT2    = 000004 G
BIT3    = 000010 G
BIT4    = 000020 G
BIT5    = 000040 G
BIT6    = 000100 G
BIT7    = 000200 G
BIT8    = 000400 G
BIT9    = 001000 G
BOE     = 000400 G
BRINIT  004361
BSEL0   = 000000
BSEL1   = 000001
CHKAMB  016720
CHKMAN  021410 G
CHKTSS  017242
CKDROP  020160
CKEMAX  020006
CKMSG   011212 G
CKMSG2  011332 G
CKRAM   010534 G
CKRAM2  011110 G
CMPMEM  020564
CONFIG  020226
COUNT   002256 G
CSR     = 174400
CSRADD  002156 G
CTAB    003122 G
CTABE   003134 G
CTABM   003122 G
C$AU    = 000052
C$AUTO  = 000061
C$BRK   = 000022
C$BSEG  = 000004
C$BSUB  = 000002
C$CEFG  = 000045
C$CLCK  = 000062
C$CLEA  = 000012
C$CLOS  = 000035
C$CLP1  = 000006
C$CVEC  = 000036
C$DCLN  = 000044
C$DODU  = 000051
C$DRPT  = 000024
C$DU    = 000053
C$EDIT  = 000003
C$ERDF  = 000055
C$ERHR  = 000056
C$ERRO  = 000060
C$ERSF  = 000054
C$ERSO  = 000057
C$ESCA  = 000010
C$ESEG  = 000005
C$ESUB  = 000003
C$ETST  = 000001
C$EXIT  = 000032
C$GETR  = 000026
C$GETW  = 000027
C$GMAN  = 000043
C$GPHR  = 000032
C$GPLO  = 000030
C$GPRI  = 000040
C$INIT  = 000011
C$INLP  = 000020
C$MANI  = 000050
C$MEM   = 000031
C$MSG   = 000023
C$OPEN  = 000034
C$PNTB  = 000014
C$PNTF  = 000017
C$PNTS  = 000016
C$PNTX  = 000015
C$QIO   = 000377
C$RDBU  = 000007
C$REFG  = 000047
C$RESE  = 000033
C$REVI  = 000003
C$RFLA  = 000021
C$RPT   = 000025
C$SEFG  = 000046
C$SPRI  = 000041
C$SVEC  = 000037
C$TPRI  = 000013
DAR     = 174404
DATA    002260 G
DATAFL  015070
DATASC  021142
DEBUGM  011464
DEVCNT  002170 G
DEVDRO  023574
DEVNRD  023513
DEVNXR  023431
DEVONL  023361
DEVSUM  023324
DFPTBL  002124 G
DIAGMC  = 000000
DLCYL   = 000177
DLDNER  = 100200
DLERR   = 177730
DLGETS  = 000004
DLRDHD  = 000010
DLRDNH  = 000016
DLSR    = 000013
DLUN    = 000006
DSBINT  017060
DUAD12  004545
DUFLG   003064 G
DUMMY   003034
EF.CON  = 000036 G
EF.NEW  = 000035 G
EF.PWR  = 000034 G
EF.RES  = 000037 G
EF.STA  = 000040 G
EMAXDU  017703
EN      = 000000
ENAINT  017026
ENVIRN  021540
EOTSEL  002140 G
EPRTSW  002150 G
EPRT1   005676
EPRT2   005737
EPRT3   006021
ERCM    011565
ERRHI   002204 G
ERRK    017662
ERRLO   002206 G
ERRNO   = 001021
ERRVEC  = 000004 G
ERTABE  003334
ERTABL  003134
ESUM    017664
EVL     = 000004 G
EWCHK   060020
EWMSG   055606
EXBCNT  = 000010
EXPBRE  016356 G
EXPD    002200 G
EXPGOT  004435
EXPGT2  004471
EXPMSG  002270 G
EXPREC  016350 G
EXTA    005236
EXTEND  005234
E$END   = 002100
E$LOAD  = 000035
FATCHK  020106
FATERR  = 000060
FATFLG  002172 G
FAULTM  052527
FERCM   011554
FIFEXP  012022 G
FIF1MS  012074
FIF2MS  012143
FILLME  020400
FLLTSW  002722 G
FNOINT  004117
FORCER  002146 G
FREE    003076 G
FREEHI  003102
FRESIZ  003100 G
FUSI    004021
F$AU    = 000015
F$AUTO  = 000020
F$BGN   = 000040
F$CLEA  = 000007
F$DU    = 000016
F$END   = 000041
F$HARD  = 000004
F$HW    = 000013
F$INIT  = 000006
F$JMP   = 000050
F$MOD   = 000000
F$MSG   = 000011
F$PROT  = 000021
F$PWR   = 000017
F$RPT   = 000012
F$SEG   = 000003
F$SOFT  = 000005
F$SRV   = 000010
F$SUB   = 000002
F$SW    = 000014
F$TEST  = 000001
GDDAT   003116 G
GERRMA  002144 G
GETPAT  021104 G
GETSEL  021166 G
G$CNTO  = 000200
G$DELM  = 000372
G$DISP  = 000003
G$EXCP  = 000400
G$HILI  = 000002
G$LOLI  = 000001
G$NO    = 000000
G$OFFS  = 000400
G$OFSI  = 000376
G$PRMA  = 000001
G$PRMD  = 000002
G$PRML  = 000000
G$RADA  = 000140
G$RADB  = 000000
G$RADD  = 000040
G$RADL  = 000120
G$RADO  = 000020
G$XFER  = 000004
G$YES   = 000010
HIADDR  = 001400
HIMEM   = 007776
HOE     = 100000 G
HPM1    065044
HPM2    065073
HPM3    065117
IBE     = 010000 G
IDU     = 000040 G
IER     = 020000 G
IFAULT  004160
INCERK  017750
INTCPC  017024
INTFLA  017021
INTMAS  017020
INTR    017072 G
INTREC  002174 G
INTVEC  017022
INTX    004202
IOKCKI  = 000200
IOKSTP  = 000001
IPRI    002162 G
ISR     = 000100 G
IVEC    002160 G
IXE     = 004000 G
I$AU    = 000041
I$AUTO  = 000041
I$CLN   = 000041
I$DU    = 000041
I$HRD   = 000041
I$INIT  = 000041
I$MOD   = 000040
I$MSG   = 000041
I$PROT  = 000040
I$PTAB  = 000041
I$PWR   = 000041
I$RPT   = 000041
I$SEG   = 000041
I$SETU  = 000041
I$SFT   = 000041
I$SRV   = 000041
I$SUB   = 000041
I$TST   = 000041
J$JMP   = 000167
KIPAR0  = 172340
KIPAR1  = 172342
KIPAR2  = 172344
KIPAR3  = 172346
KIPAR4  = 172350
KIPAR5  = 172352
KIPAR6  = 172354
KIPAR7  = 172356
KIPDR0  = 172300
KIPDR1  = 172302
```

```
KIPDR2= 172304
KIPDR3= 172306
KIPDR4= 172310
KIPDR5= 172312
KIPDR6= 172314
KIPDR7= 172316
KTENAB  003106 G
KTFLG   003104 G
KTINIT  021626
KTOFF   020252
KTON    020234
LERRMA  002142 G
LISTAL= 000001
LOE   = 040000 G
LOOPCN  002166 G
LOOPCO  012760
LOOPFL  003120 G
LOT   = 000010 G
L$ACP   002110 G
L$APT   002036 G
L$AU    022554 G
L$AUT   002070 G
L$AUTO  022760 G
L$CCP   002106 G
L$CLEA  023034 G
L$CO    002032 G
L$DEPO  002011 G
L$DESC  003346 G
L$DESP  002076 G
L$DEVP  002060 G
L$DISP  065360 G
L$DLY   002116 G
L$DTP   002040 G
L$DTYP  002034 G
L$DU    022652 G
L$DUT   002072 G
L$DVTY  003340 G
L$EF    002052 G
L$ENVI  002044 G
L$ETP   002102 G
L$EXP1  002046 G
L$EXP4  002064 G
L$EXP5  002066 G
L$HARD  065012 G
L$HIML  002120 G
L$HPCP  002016 G
L$HTP   002022 G
L$HW    002124 G
L$ICP   002104 G
L$INIT  021770 G
L$LADP  002026 G
L$LAST  065376 G
L$LOAD  002100 G
L$LUN   002074 G
L$MREV  002050 G
L$NAME  002000 G
L$PRIO  002042 G
L$PROT  021760 G
L$PRT   002112 G
L$REPP  002062 G
L$REV   002010 G
L$RPT   023062 G
L$SOFT  065152 G
L$SPC   002056 G
L$SPCP  002020 G
L$SPTP  002024 G
L$STA   002030 G
L$SW    002134 G
L$TEST  002114 G
L$TIML  002014 G
L$UNIT  002012 G
L10000  002132
L10001  002146
L10002  005232
L10003  011676
L10004  011726
L10005  011744
L10006  011752
L10007  011770
L10010  012006
L10011  012020
L10012  012072
L10013  012242
L10014  012756
L10015  013604
L10016  013626
L10017  016354
L10020  016362
L10021  016370
L10022  016402
L10023  016424
L10024  016452
L10025  016612
L10026  017122
L10030  022504
L10031  022650
L10032  022756
L10033  023032
L10034  023060
L10035  023322
L10036  032324
L10037  024310
L10040  024764
L10041  025466
L10042  026332
L10043  041320
L10044  033722
L10045  035316
L10046  035670
L10047  036332
L10050  046636
L10051  042214
L10052  043004
L10053  052776
L10054  047546
L10055  050334
L10056  051122
L10057  060210
L10060  055372
L10061  065044
L10062  065174
L10063  065402
L10065  065410
MEMADD  013606 G
MENASC  021357
MENERR  021304
MENRES  021406
MESBFA  002720 G
MESBFN  014640
MESHEA  015023
MMVEC = 000250
MPR   = 174406
MSA.FR= 000006
MSA.NO= 000000
MSA.NR= 000004
MSA.VO= 000002
MSGEXP  012010 G
MSGLOO  012716 G
MSGSTA  012202 G
MSGSUB  013574 G
MS.ATT= 000006
MS.EXT= 000200
MS.RSD= 000001
MS.RSF= 000020
MS.RST= 000010
NBA   = 002000
NEWPAS  022206
NODEV   003066 G
NOINIT  004237
NOINTR  004123
NOITS   002136 G
NOMAN   021444
NP.IR = 000200
NP.LOD= 000040
NP.OUT= 000100
NP.WRP= 000020
NSI     004054
NSINIT  004311
NUL     004431
NULCR   004432
NXM   = 004000
NXR     003642
NXRERR  005202 G
NXRX    003701
NXTU    022220
OFL   = 000100
ONEFIL= 000000
O$APTS= 000000
O$AU  = 000001
O$BGNR= 000001
O$BGNS= 000001
O$DU  = 000001
O$ERRT= 000000
O$GNSW= 000001
O$POIN= 000001
O$SETU= 000001
O.ADR1  064722
O.ALL   063306
O.AS    061002
O.ASC   064271
O.ASCI  062316
O.BACK  061266
O.BALL  063172
O.BD    064272
O.BKP = 000016
O.BKPT  061314
O.BRK   062622
O.BW    064252
O.BYT   061040
O.BYT1  061032
O.CAD   064254
O.CADV  063620
O.CLGT= 000035
O.CLSE  064116
O.COMP  062456
O.CR    064275
O.CRET  061122
O.CRLF  064150
O.CRLS  064164
O.CSR1  064266
O.CSR2  064267
O.CT    064744
O.C1    062204
O.DCD   060550
O.DCDA  061126
O.DCDB  061454
O.CD1   060570
O.CD2   060564
O.DUT   064256
O.DUMP  062236
O.EFF   061642
O.EF    060540
O.ERR1  061636
O.FCHR  064716
O.FCNT  064720
O.FTYP  063734
O.GET   064002
O.GO    062032
O.GO1   062110
O.GO2   062114
O.HIGH  064712
O.LG  = 000010
O.LGCH  064305
O.LGDR  060702
O.LOW   064710
O.MOVE  062414
O.MSK   064706
O.ODT   060212 G
O.OFST  061532
O.OLD   061130
O.OP1   061134
O.OP2   061200
O.OP2A  061206
O.ORAB  060440
O.ORPC  060416
O.ORRB  060450
O.P     064265
O.PCS   060430
O.PRNT  062554
O.PROC  062132
O.PROM  064300
O.RALL  061456
O.RCSR= 177560
O.RDB = 177562
O.REG   064204
O.REGT  060330
O.REM   063456
O.RSB   063412
O.RSR   063362
O.RSTT  063552
O.S     064263
O.SCAN  060574
O.SEMI  060774
O.SEQ   064270
O.SNGL  060520
O.SPAC  064104
O.STM = 000340
O.SVR   063322
O.SVTT  063524
O.SWCH  064714
O.T     064264
O.TBIT  062062
O.TBT = 000020
O.TCLS  060472
O.TCSR= 177564
O.TDB = 177566
O.TL    064342
O.TRTC  064352
O.TVEC= 000014
O.TYPE  064070
O.UIN   064766
O.UPC   064702
O.UPS   064704
O.URO   064664
O.USP   064700
O.WB1   061046
O.WDFG  064262
O.WRD   061016
O.WRD1  061062
O.WSCH  061646
O.XXX   064260
PASRPT  022252
PATCH   065372 G
PATDAT  021140
PC.ERA= 002400
```

USER DOCUMENTATION B1
USER DOCUMENTATION C1
USER DOCUMENTATION D1
USER DOCUMENTATION E1
USER DOCUMENTATION F1
USER DOCUMENTATION G1
USER DOCUMENTATION H1
USER DOCUMENTATION I1
USER DOCUMENTATION J1
USER DOCUMENTATION K1
USER DOCUMENTATION L1
USER DOCUMENTATION M1
USER DOCUMENTATION N1

USER DOCUMENTATION B2
USER DOCUMENTATION C2
USER DOCUMENTATION D2
USER DOCUMENTATION E2
USER DOCUMENTATION F2
USER DOCUMENTATION G2
PROGRAM HEADER H2
DEFAULT HARDWARE P-T....I2
SOFTWARE P-TABLE J2
SOFTWARE P-TABLE K2
GLOBAL EQUATES SECTI....L2
MEMORY MANAGEMENT DE....M2
MEMORY MANAGEMENT DE....N2

TK-25 REGISTER AND P....B3
TK-25 REGISTER AND P....C3
TK-25 REGISTER AND P....D3
TK-25 REGISTER AND P....E3
TK-25 REGISTER AND P....F3
TK-25 REGISTER AND P....G3
TK-25 REGISTER AND P....H3
SPECIAL MACROS AND O....I3
SPECIAL MACROS AND O....J3
GLOBAL DATA SECTION K3
TSTBLK - TEST DATA L3
GLOBAL ENVIRONMENT S....M3
GLOBAL TEXT MESSAGES....N3

GLOBAL TEXT MESSAGES....B4
GLOBAL ERROR REPORT C4
PRITSSR - PRINT TSSR....D4
PRITSSR - PRINT TSSR....E4
PRITSSR - PRINT TSSR....F4
PRIPKT - PRINT THE G4
PRIPKT - PRINT THE H4
PRIBXOR - PRINT EXPD....I4
PRIXOR - PRINT EXPD....J4
PRIEQU - PRINT BIT K4
PRIADD - PRINT MEMO....L4
SPACE - SPACE RECO....M4
SPACE - SPACE RECO....N4

SPACE - SPACE RECO....B5
WRTCHR - WRITE CHAR....C5
REWIND - POSITION T....D5
CKRAM - COMPARE RA....E5
RAMER - READ AND DIS....F5
RAMER - READ AND DIS....G5
CKRAM2 - COMPARE RA....H5
CKMSG - COMPARE WR....I5
CKMSG2 - COMPARE EX....J5
CKMSG2 - COMPARE EX....K5
CKMSG2 - COMPARE EX....L5
CKMSG2 - COMPARE EX....M5
ADDSSR - PRINT TEST....N5

FIFEXP - PRINT FIFO....B6
MSGSTAT - PRINT STAT....C6
MSGLOOP - PRINT LOOP....D6
MSGSUB - PRINT WRITE....E6
PRAMPKT - PRINT RAM F6
PRMESS - PRINT CONT....G6
PRMESS - PRINT CONT....H6
PRMESS - PRINT CONT....I6
PRMSGEXP - PRINT EXP....J6
PRMSGEXP - PRINT EXP....K6
PRBYTEXP - PRINT ERR....L6
PRBYTEXP - PRINT ERR....M6
EXPREC - PRINT EXPD....N6

EXPBREC - PRINT EXPD....B7
RAMTADD - PRINT TEST....C7
TIMEXP - PRINT TIME....D7
BADSSR - PRINT TSSR E7
GLOBAL SUBROUTINES S....F7
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TEST 1: WRITE TAPE M9
TEST 1: WRITE TAPE N9

TEST 1: WRITE TAPE B10
TEST 1: WRITE TAPE C10
TEST 1: WRITE TAPE D10
TEST 1: WRITE TAPE E10
TEST 1: WRITE TAPE F10
TEST 1: WRITE TAPE G10
TEST 1: WRITE TAPE H10
TEST 1: WRITE TAPE I10
TEST 1: WRITE TAPE J10
TEST 1: WRITE TAPE K10
TEST 1: WRITE TAPE L10
TEST 1: WRITE TAPE M10
TEST 1: WRITE TAPE N10

TEST 2: SKIP TAPE M....B11
TEST 2: SKIP TAPE M....C11
TEST 2: SKIP TAPE M....D11
TEST 2: SKIP TAPE M....E11
TEST 2: SKIP TAPE M....F11
TEST 2: SKIP TAPE M....G11
TEST 2: SKIP TAPE M....H11
TEST 2: SKIP TAPE M....I11
TEST 2: SKIP TAPE M....J11
TEST 2: SKIP TAPE M....K11
TEST 2 SKIP TAPE M....L11
TEST 2: SKIP TAPE M....M11
TEST 2. SKIP TAPE M....N11

TEST 2 SKIP TAPE M....B12
TEST 2: SKIP TAPE M....C12
TEST 2: SKIP TAPE M....D12
TEST 2: SKIP TAPE M....E12
TEST 2: SKIP TAPE M....F12
TEST 2: SKIP TAPE M....G12
TEST 2: SKIP TAPE M....H12
TEST 2: SKIP TAPE M....I12
TEST 2: SKIP TAPE M....J12
TEST 2: SKIP TAPE M....K12
TEST 2: SKIP TAPE M....L12
TEST 2: SKIP TAPE M....M12
TEST 2: SKIP TAPE M....N12

TEST 3: NO-OP ("CLE....B13
TEST 3: NO-OP ("CLE....C13
TEST 3: NO-OP ("CLE....D13
TEST 3: NO-OP ("CLE....E13
TEST 3: NO-OP ("CLE....F13
TEST 3: NO-OP ("CLE....G13
TEST 3: NO-OP ("CLE....H13
TEST 3: NO-OP ("CLE....I13
TEST 3: NO-OP ("CLE....J13
TEST 3: NO-OP ("CLE....K13
TEST 3: NO-OP ("CLE....L13
TEST 3: NO-OP ("CLE....M13
TEST 4: ERASE AND O....N13

TEST 4: ERASE AND O....B14
TEST 4: ERASE AND O....C14
TEST 4: ERASE AND O....D14
TEST 4: ERASE AND O....E14
TEST 4: ERASE AND O... F14
TEST 4: ERASE AND O....G14
TEST 4: ERASE AND O....H14
TEST 4: ERASE AND O....I14
TEST 4: ERASE AND O....J14
TEST 4: ERASE AND O....K14
TEST 4. ERASE AND O....L14
TEST 4: ERASE AND O....M14
TEST 4: ERASE AND O....N14

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TEST 5: OPERATIONS G15
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TEST 5: OPERATIONS J15
TEST 5: OPERATIONS K15
TEST 5: OPERATIONS L15
TEST 5: OPERATIONS M15
TEST 5: OPERATIONS N15

TEST 5: OPERATIONS B16
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TEST 5: OPERATIONS E16
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TEST 5: OPERATIONS H16
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SYMBOL TABLE M16

SYMBOL TABLE

```
PC.IER= 002000
PC.NOO= 001000
PC.REL= 000000
PC.REW= 000400
PKBCNT= 000006
PKHI  = 000004
PKLOW = 000002
PKTADD  007272
PKTFRM  007234
PKTGET  011730 G
PKTMES  011754 G
PKTNEW  007327
PKTRAM  004647 G
PKTSSR  011700 G
PNT   = 001000 G
PRAWPK  013630
PRBEXP  016344
PRBMSG  016212
PRBREC  016346
PRBTOT  016277
PRBYTE  015776 G
PRI   = 002000 G
PRIADD  007706
PRIAO   007756
PRIBXO  007340 G
PRIEQU  007606
PRIPKT  007066 G
PRIRAM  007614
PRITAD  010022
PRITCS  005270
PRITO   010072
PRIXOR  007470 G
PRIO0 = 000000 G
PRIO1 = 000040 G
PRIO2 = 000100 G
PRIO3 = 000140 G
PRIO4 = 000200 G
PRIO5 = 000240 G
PRIO6 = 000300 G
PRIO7 = 000340 G
PRMESS  014062
PRMNO   002266 G
PRMSGE  015426 G
PRMSG0  015606
PRMSG1  015653
PRMSG2  015711
PROASC  014720
PR1ASC  014765
PST32W  003110 G
PUNIT   022506
PW.D11= 000021
PW.D13= 000022
PW.D22= 000020
PW.NOP= 000000
PW.NO1= 000023
PW.RDE= 000024
PW.RDR= 000001
PW.RDS= 000005
PW.RFI= 000003
PW.WCT= 000006
PW.WFI= 000004
PW.WFM= 000007
PW.WMI= 000010
PW.WNP= 000011
PW.WTR= 000002
P.ACK = 100000
P.CMD = 000037
P.CONT= 000012
P.CVC = 040000
P.FMT = 000140
P.FORM= 000011
P.GETS= 000017
P.IE  = 000200
P.INIT= 000013
P.MODE= 007400
P.OPP = 020000
P.POSI= 000010
P.READ= 000001
P.SWB = 010000
P.WRIT= 000005
P.WRTC= 000004
P.WRTS= 000006
QVP     002154 G
RAMASC  013776
RAMDAT  002210 G
RAMER   010636 G
RAMERR  016364 G
RAMEXP  016404 G
RAMFHR  014542
RAMFOR  007644
RAMHLD  011020
RAMOUT  011024
RAMPD   011075
RAMRSH  011022
RAMSIZ  002250 G
RAMTAD  016372 G
RBPCRA  015135
RCVHIA  002252 G
RCVLOA  002254 G
RDERR   005110
READ  = 000014
READY = 000001
RECMSG  002434 G
RECV    002202 G
REGSAV  021044
REWIND  010434 G
RMCHBE= 000167
RMCHEN= 000200
RMMSGB= 000104
RMMSGE= 000117
RMPKTB= 000020
RMPKTE= 000027
RMR   = 010000
RWPACK  010530
SC    = 100000
SCE   = 020000
SCME    004715
SDELAY  010330
SEEK  = 000006
SELASC  021352
SELDAT= 000004
SEL2  = 000002
SETMAP  020274
SETU    022304
SFFMSG  011746 G
SFHERR  003607
SFIERR  003554
SFIMSG  011666 G
SFPTBL  002134 G
SIFLAG  003112 G
SIMSG   011620
SKIPT   003336
SOFINI  016650 G
SPACE   010134 G
SPM1    065174
SPM4    065240
SPM6    065270
SR0   = 177572
SR1   = 177574
SR2   = 177576
SR3   = 172516
SSR   = 000200
STATCO  012244
SVCGBL= 000000
SVCINS= 000000
SVCSUB= 000001
SVCTAG= 000000
SVCTST= 000001
S$LSYM= 010000
SO.IDB= 000010
SO.IFB= 000002
SO.IFP= 000001
SO.ILD= 000020
SO.ION= 000040
SO.IRD= 000100
SO.IRW= 000004
SO.ISP= 000200
S1.ICE= 002000
S1.IEO= 010000
S1.IFM= 001000
S1.IME= 000400
S1.IID= 004000
S1.I1R= 020000
S1.I2R= 040000
S1.PAR= 100000
S2.ATI= 000010
S2.BTI= 000004
S2.DIM= 000200
S2.ILW= 000100
S2.INR= 000020
S2.OUT= 000040
S2.UNC= 000003
TBLEND= 003034 G
TCOASC  006173
TCOCOD  006374
TEMP1   003070 G
TEMP2   003072 G
TERCLS= 000016
TESTNO= 000005
TEXASC  006132
TFCASC  006234
TIMEXP  016426 G
TIMSGO  016454
TINERR  011653
TKB   = 177562
TKS   = 177560
TMPBFR  002600 G
TNAM    017610
TPB   = 177566
TPS   = 177564
TRANST  002134 G
TSBA  = 177776 G
TSBAH = 177777 G
TSBAL = 177776 G
TSDB  = 177776 G
TSDBH = 177777 G
TSDBL = 177776 G
TSFCOD  006734
TSREJ = 000006
TSSDEF  006303
TSSR  = 000000 G
TSSRBI  003404 G
TSSRFO  006112
TSSRH = 000001 G
TSSX    003722
TSTBLK  002724 G
TSTCNT  002164 G
TSTEND  017624
TSTFLA  002262 G
TSTLOO  017362 G
TSTPTR  002264 G
TSTSET  017414 G
TST29I  032111
TST30I  041121
TST31I  046413
TST32I  052470
TST34I  057224
TTIBFR= 177562 G
TTICSR= 177560 G
TTIVEC= 000060 G
TTOBFR= 177566
TTOCSR= 177564
TUV2A   002000 G
T$ARGC= 000001
T$CODE= 002130
T$ERRN= 001021
T$EXCP= 000000
T$FLAG= 000040
T$FREE= 065410
T$GMAN= 000000
T$HILI= 000007
T$LAST= 000001
T$LOLI= 000000
T$LSYM= 010000
T$LTNO= 000005
T$MIST= 000000
T$NS0 = 000000
T$NS1 = 000005
T$NS2 = 000002
T$PCNT= 000000
T$PTAB= 010064
T$PTHV= 000001
T$PTNU= 000001
T$SAVL= 177777
T$SEGL= 177777
T$SIZE= 000005
T$SUBN= 000001
T$TAGL= 177777
T$TAGN= 010066
T$TEMP= 000006
T$TEST= 000005
T$TSTM= 177777
T$TSTS= 000001
T$$AU = 010031
T$$AUT= 010033
T$$CLE= 010034
T$$DAT= 010065
T$$DU = 010032
T$$HAR= 010061
T$$HW = 010000
T$$INI= 010030
T$$MSG= 010025
T$$PC = 000001
T$$PRO= 010027
T$$PTA= 010064
T$$RPT= 010035
T$$SOF= 010062
T$$SRV= 010026
T$$SUB= 010060
T$$SW = 010001
T$$TES= 010057
T1      023644 G
T1.1    023704
T1.2    024312
T1.3    024766
T1.4    025470
T2      032326 G
T2.1    032362
T2.2    033724
T2.3    035320
T2.4    035672
T29AM3  030412
T29BA   030754
T29BFR  026400
T29BF2  026520
```

SYMBOL TABLE

T29BOT	027761	T30BF2	036520	T31CNT	043206	T32DAT	051160	T34TMN	057515		
T29BSO	026520	T30BOT	037731	T31CNU	043210	T32DLY	051344	T34TRK	055566		
T29BS1	026521	T30BSO	036520	T31CON	043202	T32ECF	052305	T34WB	055552		
T29CNT	026544	T30ES1	036521	T31DAT	043040	T32EOT	051441	T34WD	055576		
T29CON	026532	T30CNT	036540	T31DLY	043212	T32ERA	051646	T34WDR	055600		
T29DAT	026370	T30CNU	036542	T31DTA	046316	T32LOO	046732	T34WOL	057652		
T29DLY	026550	T30DAT	036370	T31EOT	044410	T32OPI	052433	T34WTM	056341		
T29DTA	030026	T30DLY	036546	T31LON	045370	T32PAC	051150	T4	046640	G	
T29EOT	030114	T30DTA	041024	T31LOO	041362	T32PK2	051260	T4.1	046732		
T29LON	031135	T30DTR	040760	T31LOP	045452	T32PK3	051300	T4.2	047550		
T29LOO	023704	T30ETM	036376	T31LOQ	043766	T32RB	051302	T4.3	050336		
T29LOP	031217	T30FCN	036544	T31LOR	043641	T32RES	052632	T5	053000	G	
T29LOQ	027476	T30IBT	036721	T31NEF	045710	T32RIB	051766	T5.1	053040		
T29LOR	027351	T30IBU	036550	T31OFL	044735	T32RT2	052724	UAM	= 000200	G	
T29NEF	026700	T30IMV	036526	T31PAC	043030	T32RT3	052754	UNITN	002152	G	
T29NEQ	031455	T30LOO	032362	T31PBP	045534	T32RWN	051530	UNREC	= 000006		
T29OFL	026552	T30LOQ	037520	T31PK2	043140	T32SCF	052064	USI	004025		
T29PAC	026360	T30NEF	040466	T31PK3	043160	T32SZ	051306	WAITF	017124	G	
T29PBP	031301	T30OFL	040177	T31RB	043162	T32TSA	052141	WC.IFA	= 000200		
T29PK2	026470	T30PAC	036360	T31RDE	043214	T32WB	051302	WC.IFE	= 000002		
T29PK3	026510	T30PK2	036470	T31RDF	043413	T32WDC	052366	WC.IGO	= 000001		
T29RB	026512	T30PK3	036510	T31RES	046460	T34BFR	055440	WC.IRE	= 000010		
T29RDF	026770	T30PTB	037132	T31RN	043176	T34BF2	055570	WC.IRW	= 000004		
T29RDG	031553	T30RB	036512	T31RNC	044613	T34BOT	056232	WC.IOT	= 000100		
T29RES	032140	T30RDF	037303	T31RRF	043462	T34BSO	055570	WC.I1T	= 000040		
T29RIB	031716	T30RDG	037361	T31RT2	046552	T34BS1	055571	WC.I5R	= 000020		
T29RN	026526	T30RES	041142	T31RT3	046614	T34CNT	055562	WF.IED	= 000010		
T29RNC	030337	T30RIB	036635	T31RWN	044544	T34CON	055602	WF.IER	= 000004		
T29RRF	027037	T30RN	036526	T31SC	043557	T34DAT	055430	WF.IHI	= 000200		
T29RRG	027153	T30RRM	040545	T31SCF	046031	T34DLY	055564	WF.IRE	= 000040		
T29RRN	032016	T30RRN	040623	T31SSR	044047	T34EOT	057146	WF.IWF	= 000020		
T29RSZ	026546	T30RRP	040702	T31SZ	043166	T34ET	057057	WF.IWR	= 000100		
T29RT2	032232	T30RT2	041234	T31S2	043172	T34ETC	056155	WF.I3R	= 000002		
T29RT3	032274	T30RT3	041276	T31S3	043174	T34ETN	056516	WF.I4R	= 000001		
T29RWN	030270	T30RWN	040130	T31TIM	044310	T34ETO	055764	WRTCHR	010332	G	
T29SC	027267	T30SKM	037004	T31TM	044467	T34ETS	056601	WRTERR	005015		
T29SDG	031634	T30SSR	037601	T31TRL	045622	T34ETZ	056667	WRTMSG	004760		
T29SSR	027557	T30SZ	036516	T31TSA	046106	T34ET2	056430	XFERAS	016614		
T29SZ	026516	T30S2	036522	T31VCK	045153	T34LOO	053040	XNXM	017302		
T29S2	026522	T30S3	036524	T31WB	043162	T34PAC	055420	XORBFO	007422		
T29S3	026524	T30TM	037776	T31WDC	045100	T34PK2	055530	XORFOR	007540		
T29TM	030212	T30TMK	040404	T31WDO	045010	T34PK3	055550	XST0	= 000006	G	
T29TRL	031367	T30TM2	040053	T31WDE	044103	T34POS	055676	XST1	= 000010	G	
T29VCK	030701	T30TPB	037223	T31WDF	043711	T34RB	055552	XST2	= 000012	G	
T29WB	026512	T30VCK	040331	T31WDR	043200	T34RES	057726	XST3	= 000014	G	
T29WDC	030607	T30WB	036512	T31WNG	043341	T34RRE	056054	XST4	= 000016	G	
T29WDO	030500	T30WDC	040252	T31WNH	043260	T34RRF	057600	XSOBOT	= 000002		
T29WDE	027632	T30WDO	037060	T31WPF	046213	T34RSZ	055560	XSOCON	015202		
T29WDF	027421	T30WDE	037652	T31WSS	045301	T34RT2	060122	XSOEOT	= 000001		
T29WDR	026530	T30WDF	037443	T32AM3	051577	T34RT3	060164	XSOIE	= 000040		
T29WNG	026573	T31AM3	044666	T32BA	051713	T34RWN	057246	XSOILA	= 000400		
T29WRT	027714	T31BA	045226	T32BFR	051170	T34STE	057421	XSOILC	= 001000		
T29WSS	031046	T31BFR	043050	T32BOE	052216	T34STM	057325	XSOLET	= 020000		
T3	041322	G T31BF2	043170	T32BOT	051346	T34SZ	055556	XSOMOT	= 000200		
T3.1	041362	T31BOT	044215	T32CMD	051310	T34S2	055572	XSONEF	= 002000		
T3.2	042216	T31BSO	043170	T32CNT	051340	T34S3	055574	XSOONL	= 000100		
T30BFR	036400	T31BS1	043171	T32CNU	051342	T34TMK	056751	XSOPED	= 000010		

```
SYMBOL TABLE

XSORLL= 010000          XXCOMM  003074 G        X1.RBP= 000400          X2.SPA= 035400          X3.RIB= 000001
XSORLS= 040000          X$ALWA= 000000          X1.SPA= 040000          X2.UNI= 000007          X3.SPA= 000200
XSOTMK= 100000          X$FALS= 000040          X1.UNC= 000002          X2.WCF= 002000          X3.TRF= 000020
XSOVCK= 000020          X$OFFS= 000400          X2.BUF= 000100          X3.DCK= 000010          X4.HSP= 100000
XSOWLE= 004000          X$TRUE= 000020          X2.EXT= 000200          X3.MBZ= 000006          X4.MBZ= 017400
XSOWLK= 000004          X1.COR= 020000          X2.OPM= 100000          X3.MDE= 177400          X4.RCE= 040000
XS1CON  015247          X1.DLT= 100000          X2.RCE= 040000          X3.OPI= 000100          X4.TSM= 020000
XS2CON  015314          X1.MBZ= 017375          X2.REV= 000077          X3.REV= 000040          X4.WRC= 000377
XS3CON  015362

. ABS.  065410     000
        000000     001
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  31872 WORDS  ( 125 PAGES)
DYNAMIC MEMORY:  20060 WORDS  ( 77 PAGES)
ELAPSED TIME:  00:32:05
CZTKHA.BIC,CZTKHA/-SP=SVC/ML,CZTKHA
```

```
SYMBOL TABLE          ....B1
SYMBOL TABLE          ....C1
SYMBOL TABLE          ....D1
```