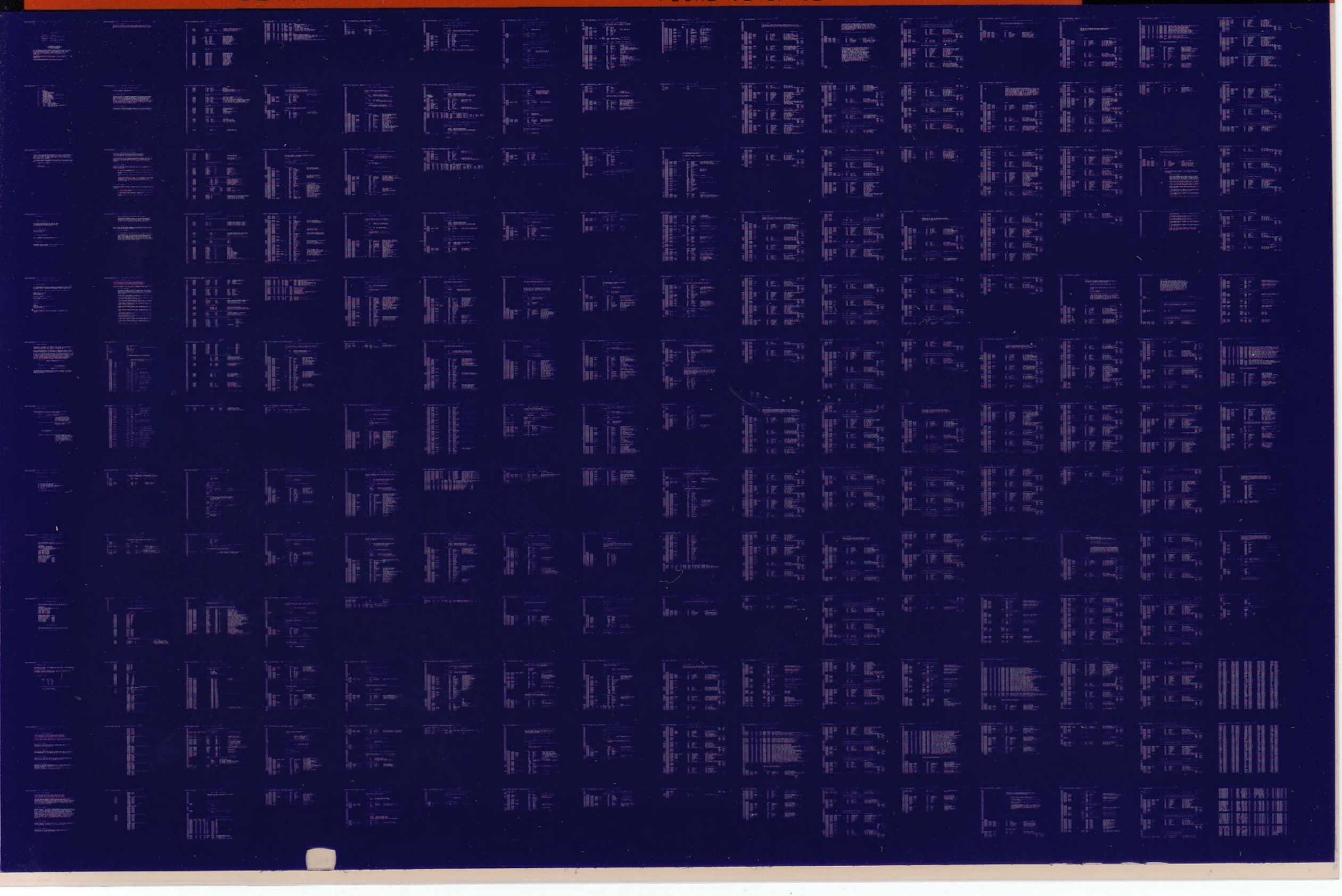
TK25 TK25 FRT END FUNC #4
CZTKHAO

AH-T782A-MC
FICHE 01 OF 02

JUL 1984
digital
Made In USA



TK25 TK25 FRT END FUNC #4
CZTKHA0

AH-T782A-MC
FICHE 02 OF 02

JUL 1984
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.REM\

IDENTIFICATION

PRODUCT ID: AC-T781A-MC

PRODUCT TITLE: CZTKHA TK25 FRT END FUNC #4

PRODUCT DATE: MARCH, 1984

DEPARTMENT: TAPE DIAGNOSTIC ENGINEERING

AUTHOR: DICE SYSTEMS, INC.

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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)

```
CHMDLE0 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-E0
CZTKH-A-0
CZTKHA TK-25 FRT END FUNC 04 UNI. 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,BITO
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
XSTATO 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 #0 =141011
PACKET WORD #1 =065152
PACKET WORD #2 =000000
PACKET WORD #3 =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 (XSTO)

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 (NORMALLY 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 RE ERSE
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.
                                ;--

                                        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
                                ;
```

GLOBAL EQUATES SECTION

```
                000340                  PRIO7== 340
                000300                  PRIO6== 300
                000240                  PRIO5== 240
                000200                  PRIO4== 200
                000140                  PRIO3== 140
                000100                  PRIO2== 100
                000040                  PRIO1== 40
                000000                  PRIO0== 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
                        ;-

100C00                  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                  XSOTMK= BIT15                   ;TAPE MARK DETECTED
040000                  XSORLS= BIT14                   ;RECORD LENGTH SHORT
020000                  XSOLET= BIT13                   ;LOGICAL END OF TAPE
010000                  XSORLL= BIT12                   ;RECORD LENGTH LONG
004000                  XSOWLE= BIT11                   ;WRITE LOCK ERROR
002000                  XSONEF= BIT10                   ;NON EXECUTABLE FUNCTION
001000                  XSOILC= BIT9                    ;ILLEGAL COMMAND
000400                  XSOILA= BIT8                    ;ILLEGAL ADDRESS
000200                  XSOMOT= BIT7                    ;TAPE IN MOTION
000100                  XSOONL= BIT6                    ;TRANSPORT ON LINE
000040                  XSOIE=  BIT5                    ;INTERRUPT ENABLE
000020                  XSOVCK= BIT4                    ;VOLUME CHECK BIT
000010                  XSOPED= BIT3                    ;PHASE ENCODED DRIVE
000004                  XSOWLK= BIT2                    ;WRITE LOCKED
000002                  XSOBOT= BIT1                    ;BEGINNING OF TAPE
000001                  XSOEOT= BIT0                    ;END OF TAPE


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

```
                        ;*
                        ;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 ERROP

                        ;*
                        ;
                        ;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
```

```
                        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
```

```
 994          000100                  WC.IOTAD        = BIT6                  ;ITAD0  - TRANSPORT ADDRESS BIT 0
 995          000040                  WC.I1TAD        = BIT5                  ;ITAD1  - TRANSPORT ADDRESS BIT 1
 996          000020                  WC.I5RESV       = BIT4                  ;IRESV5 - RESERVED #5
 997          000010                  WC.IREW         = BIT3                  ;IREW   - REWIND
 998          000004                  WC.IRWU         = BIT2                  ;IRWU   - REWIND AND UNLOAD
 999          000002                  WC.IFEN         = BIT1                  ;IFEN   - FORMATTER ENABLE
1000          000001                  WC.IGO          = BIT0                  ;GO
1001
1002                                  ;+
1003                                  ;BSEL1 CODES FOR WRITE FORMAT
1004                                  ;-
1005          000200                  WF.IHISP        = BIT7                  ;IHISP  - HIGH SPEED
1006          000100                  WF.IWRT         = BIT6                  ;IWRT   - WRITE
1007          000040                  WF.IREV         = BIT5                  ;IREV   - REVERSE
1008          000020                  WF.IWFM         = BIT4                  ;IWFM   - WRITE FILE MARK
1009          000010                  WF.IEDIT        = BIT3                  ;IEDIT  - EDIT
1010          000004                  WF.IERASE       = BIT2                  ;IERASE - ERASE
1011          000002                  WF.I3RESV       = BIT1                  ;IRESV3 - RESERVED #3
1012          000001                  WF.I4RESV       = BIT0                  ;IRESV4 - RESERVED #4
1013
1014
1015                                  ;+
1016                                  ;BSEL1 CODES FOR WRITE MISCELLANEOUS SUBCOMMAND
1017                                  ;-
1018          000200                  MS.EXT          = BIT7                  ;INVERT SENSE OF EXTENDED FEATURES SWITCH
1019          000020                  MS.RSFIFO       = BIT4                  ;RESET FIFO AND INPUT PARITY ERRORR
1020          000010                  MS.RSTAPE       = BIT3                  ;RESET TAPE STATUS IN 2 FLIP-FLOPS
1021          000006                  MS.ATTN         = BIT2!BIT1             ;ATTENTION TRIGGER FIELD
1022          000001                  MS.RSD          = BIT0                  ;RESET TIMER A,B THEN DELAY TIMES IN SEL2
1023                                  ;+
1024                                  ; MS.ATTN SUBCODES
1025                                  ;-
1026          000000                          MSA.NOP = 0^2                   ;NO-OP (NOTHING TRIGGERED)
1027          000002                          MSA.VOL = 1^2                   ;SIMULATE ON-LINE/OFF-LINE TRANSISTION
1028          000004                          MSA.NRAM= 2^2                   ;FORCE NON-FATAL RAM ERROR (FORCES ERRCODE 54)
1029          000006                          MSA.FRAM= 3^2                   ;FORCE FATAL RAM ERROR (CAUSES SCE TO SET)
1030
1031                                  ;+
1032                                  ; WRITE SUBSYSTEM WRITE NPR BSEL1 BIT DEFINITIONS
1033                                  ;-
1034          000200                  NP.IR           = BIT7                  ;INTERRUPT REQUEST (0-1 TRANSITION)
1035          000100                  NP.OUT          = BIT6                  ;TAPE DATA DIRECTION OUT (0= IN)
1036          000040                  NP.LOOP         = BIT5                  ;ENABLE TRANSPORT LOOPBACK
1037          000020                  NP.WRP          = BIT4                  ;WRITE CORRECT PARITY (SET=0 TO WRITE WRONG)
1038                                  ;+
1039                                  ; READ STATUS MESSAGE BUFFER BIT DEFINITIONS
1040                                  ;-
1041          000200                  S2.DIM          = BIT7                  ;WORD #9 BYTE 2 DATA IN MISS
1042          000100                  S2.ILW          = BIT6                  ;               ILW H
1043          000040                  S2.OUTRDY       = BIT5                  ;               OUT RDY H
1044          000020                  S2.INRDY        = BIT4                  ;               IN RDY H
1045          000010                  S2.ATIMR        = BIT3                  ;               TIMER A FLAG H
1046          000004                  S2.BTIMR        = BIT2                  ;               TIMER B FLAG H
1047          000003                  S2.UNDEF        = BIT1+BIT0             ;(UNDEFINED)
1048          100000                  S1.PARIN        = BIT15                 ;WORD #8 BYTE 1 PARIN H
1049          040000                  S1.I2RESV       = BIT14                 ;               IRESV2
1050          020000                  S1.I1RESV       = BIT13                 ;               IRESV1
```

```
1051    010000          S1.IEOT     = BIT12         ;               IEOT L
1052    004000          S1.IIDENT   = BIT11         ;               IIDENT H
1053    002000          S1.ICER     = BIT10         ;               ICER H
1054    001000          S1.IFMK     = BIT9          ;               IFMK H
1055    000400          S1.IHER     = BIT8          ;               IHER H
1056    000200          S0.ISPEED   = BIT7          ;WORD #8 BYTE 0 ISPEED H
1057    000100          S0.IRDY     = BIT6          ;               IRDY L
1058    000040          S0.IONL     = BIT5          ;               IONL L
1059    000020          S0.ILDP     = BIT4          ;               ILDP L
1060    000010          S0.IDBY     = BIT3          ;               IDBY L
1061    000004          S0.IRWD     = BIT2          ;               IRWD L
1062    000002          S0.IFBY     = BIT1          ;               IFBY L
1063    000001          S0.IFPT     = BIT0          ;               IFPT L
1064                    ;       SPECIAL KEYBORD STUFF FOR MOVER PROGRAM
1065
1066    177560              TKS     =177560         ;KEYBOARD STATUS REGISTER
1067    177562              TKB     =177562         ;KEYBOARD DATA REGISTER
1068    177564              TPS     =177564         ;CONSOLE PRINTER STATUS REGISTER
1069    177566              TPB     =177566         ;CONSOLE PRINTER DATA REGISTER
1070    007776              HIMEM   =007776         ;HIGH MEMORY MASK VALUE
1071                    ;       CONTROLLER DEFINITIONS
1072                    ;
1073                    ;
1074    174400              CSR     =174400         ;STATUS AND CONTROL REGISTER
1075    174402              BAR     =174402         ;DL ADDRESS REGISTER
1076    174404              DAR     =174404         ;PLATTER ADDRESS
1077    174406              MPR     =174406         ;MULTIPURPOSE REGISTER
1078                    ;
1079                    ;
1080                    ;
1081                    ;
1082                    ;
1083                    ;       CONTROLLER COMMANDS
1084                    ;
1085                    ;
1086    000004              DLGETS  =4              ;GET STATUS COMMAND
1087    000006              SEEK    =6              ;SEEK TRACK AND HEAD SELECT
1088    000010              DLRDHD  =10             ;READ SECTOR HEADER
1089    000014              READ    =14             ;READ COMMAND
1090    000016              DLRDNH  =16             ;READ SECTOR NO HEADER CHECK
1091                    ;
1092                    ;
1093                    ;
1094                    ;
1095                    ;
1096                    ;
1097    000001              READY   =1              ;DRIVE READY BIT IN STATUS REG.
1098    000013              DLSR    =13             ;STATUS AND RESET
1099    177730              DLERR   =177730         ;MASK FOR COVER OPEN
1100    000006              DLUN    =6              ;HEADS UNLOADED
1101    000177              DLCYL   =000177         ;MASK FOR CYLINDER ADDRESS
1102    100200              DLDNER  =100200         ;DONE SET OR ERROR SET BITS
1103                    ;
1104                    ;
1105                    ;
1106                    ;
1107                    ;       ROMBASE =       MOVER           ;START OF THE BOOT ROM @@@@@
```

```
1108            177560                  TTICSR  =       177560  ;KEYBOARD INPUT STATUS
1109            177562                  TTIBFR  =       177562  ;KEYBOARD DATA REGISTER
1110            177564                  TTOCSR  =       177564  ;CONSOLE PRINTER STATUS REGISTER
1111            177566                  TTOBFR  =       177566  ;CONSOLE PRINTER DATA REGISTER
1112
```

```
1114                                    .SBTTL  SPECIAL MACROS AND OPDEFS.
1115
1116
1117                                ;+
1118                                ;SAVE GENERAL REGS 1 TO 5
1119                                ;-
1120
1121                                        .MACRO  SAVREG
1122                                        JSR     R5,REGSAV
1123                                        .ENDM
1124
1125                                ;+
1126                                ; MACRO TO FORCE AN ERROR
1127                                ;-
1128                                .MACRO  FORCERROR       TAG,NOTSSR
1129                                .NLIST
1130                                .IIF NDF LISTALL, .NLIST
1131                                .LIST
1132                                .IF B NOTSSR
1133                                        MOV     TSSR(R5),R1             ;READ TSSR
1134                                .ENDC
1135                                        MOV     FORCER,FORCER           ;IS FORCER SET? (LEAVE C BIT ALONE)
1136                                        BNE     TAG                     ;BR IF YES
1137                                .NLIST
1138                                .IIF NDF LISTALL, .LIST
1139                                .LIST
1140                                .ENDM
1141
1142                                ;+
1143                                ; MACRO TO FORCE AN EXIT TO AVOID SECTION ITERATIONS
1144                                ;       WILL EXIT TO A LABEL IF FORCER IS NEGATIVE
1145                                ;       SO TO FORCE ERRORS AND EXIT ON 1 ERROR SET
1146                                ;       FORCER TO 177777
1147                                ;       TO FORCE ERRORS AND ITERATIONS SET FORCER TO 1.
1148                                ;-
1149                                .MACRO  FORCEXIT        TAG
1150                                .NLIST
1151                                .IIF NDF LISTALL, .NLIST
1152                                .LIST
1153                                        MOV     FORCER,FORCER           ;IS FORCER NEGATIVE?
1154                                        BMI     TAG                     ;BR IF YES
1155                                .NLIST
1156                                .IIF NDF LISTALL, .LIST
1157                                .LIST
1158                                .ENDM
1159                                ;+
1160                                ; MACRO TO INCREMENT ERROR COUNTS
1161                                ;-
1162                                .MACRO  NEXT.ERRNO
1163                                .NLIST
1164                                ;;;.IIF NDF LISTALL, .NLIST
1165                                        ERRNO=ERRNO+1
1166                                ;;;.IIF NDF LISTALL, .LIST
1167                                .LIST
1168                                .ENDM
1169
1170                                ;+
```

```
                                ;MACRO TO PERFORM XOR
                                ;-

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

                                        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 USE
                                ;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$:      .ASCIZ  'SC'
003447     102     111     105  2$:      .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$:     .ASCIZ  'BIT3'
003534     102     111     12?  14$:     .ASCIZ  'BIT2'
003541     102     111     1 ,  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/
```

```
1394 004021 045 116 045 FUSI:   .ASCII  /%N%A/
1395 004025 040 040 125 USI:    .ASCIZ  /  UNEXPECTED INTERRUPT/
1396 004054 040 040 111 NSI:    .ASCIZ  /  INTERRUPT EXPECTED, NOT RECEIVED/
1397 004117 045 116 045 FNOINTR:        .ASCII  /%N%A/
1398 004123 040 040 116 NOINTR: .ASCIZ  /  NO INTERRUPT WAS GENERATED/
1399 004160 040 040 111 IFAULT: .ASCIZ  /  INTERRUPT FAULT/
1400 004202 045 101 040 INTX:   .ASCIZ  /%A  CPU PC: %O6%A  TSBA: %O6/
1401 004237 040 040 042 NOINIT: .ASCIZ  /  "BUS-INIT" DIDN'T INITIALIZE CONTROLLER/
1402 004311 040 040 042 NSINIT: .ASCIZ  /  "SOFT-INIT" DIDN'T INITIALIZE THE DPU/
1403 004361 040 040 042 BRINIT: .ASCIZ  /  "BUS-RESET" DIDN'T INITIALIZE THE DPU/
1404
1405 004431 000         NUL:    .ASCIZ  //
1406 004432 045 116 000 NULCR:  .ASCIZ  /%N/
1407 004435 045 101 040 EXPGOT: .ASCIZ  /%A EXP'D: %O6%A, REC'D: %O6/
1408 004471 045 116 045 EXPGT2: .ASCIZ  /%N%A EXP'D: %O6%A, %O6%N%A REC'D: %O%A, %O6/
1409 004545 045 101 040 DUAD12: .ASCIZ  /%A REG(W) WRITTEN TO: %O6%A REG(R) READ; EXP'D: %O6%A, REC'D: %O6/
1410 004647 122 101 115 PKTRAM::        .ASCIZ  'RAM Contents Do Not Match Packet Sent'
1411 004715 040 040 103 SCME:   .ASCIZ  /  CONFIG DOESN'T MATCH MFG. MASTER/
1412 004760 127 122 111 WRTMSG: .ASCIZ  'WRITE CHARACTERISTICS Failed'
1413 005015 124 123 123 WRTERR: .ASCIZ  'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
1414 005110 124 123 123 RDERR:  .ASCIZ  'TSSR Incorrect After READ Command, More Bits Set Than SSR'
1415                            .EVEN
1416
1417
1418
```

```
                                        .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
```

```
1446                                    .SBTTL  PRITSSR - PRINT TSSR CONTENTS
1447
1448                                ;+
1449                                ;
1450                                ;ROUTINE TO DISPLAY THE CONTENTS, AND BIT DEFINITIONS, OF
1451                                ;THE TSSR REGISTER. THIS ROUTINE IS NORMALLY CALLED ONLY
1452                                ;BY A MESSAGE PRINTING ROUTINE
1453                                ;
1454                                ;INPUTS:
1455                                ;
1456                                ;       R1      CONTENTS OF TSSR
1457                                ;
1458                                ;SUBORDINATE ROUTINES:
1459                                ;
1460                                ;       CHKAMB  CHECK FOR AMBIGUOUS CONTENTS
1461                                ;
1462                                ;-
1463
1464 005270                         PRITSSR:
1465 005270                                 SAVREG                          ;SAVE GENERAL REGISTERS
1466 005274  010104                        MOV     R1,R4                   ;SAVE THE TSSR CONTENTS
1467 005276                                PRINTB  #TSSRFOR,R4             ;PRINT THE CONTENTS OF TSSR
     005276  010446                        MOV     R4,-(SP)
     005300  012746  006112                MOV     #TSSRFOR,-(SP)
     005304  012746  000002                MOV     #2,-(SP)
     005310  010600                        MOV     SP,R0
     005312  104414                        TRAP    C$PNTB
     005314  062706  000006                ADD     #6,SP
1468 005320  010400                        MOV     R4,R0                   ;GET TSSR BACK FOR CHKAMB
1469 005322  004737  016720                JSR     PC,CHKAMB               ;ARE CONTENTS AMBIGUOUS ?
1470 005326  103410                        BCS     5$                      ;BRANCH IF NOT
1471 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$PNTX
     005344  062706  000004                ADD     #4,SP
1472 005350  010403                 5$:    MOV     R4,R3                   ;CONTENTS OF TSSR
1473 005352  042703  001476                BIC     #HIADDR!FATERR!TERCLS,R3        ;CLEAR ALL MULTIPLE BIT FIELDS
1474 005356  001434                        BEQ     20$                     ;NO BITS ARE SET
1475 005360  012702  002600                MOV     #TMPBFR,R2              ;TEMPORARY ASCII BUFFER
1476 005364  012701  003404                MOV     #TSSRBIT,R1             ;ASCII EQUIVALENT OF BITS
1477 005370  005703                 10$:   TST     R3                      ;REMAINING BITS TO CONVERT
1478 005372  001413                        BEQ     15$                     ;BRANCH WHEN ALL ARE DONE
1479 005374  000241                        CLC                             ;CLEAR CARRY FOR SHIFT
1480 005376  006103                        ROL     R3                      ;SHIFT NEXT BIT TO CARRY
1481 005400  103006                        BCC     13$                     ;BRANCH IF BIT NOT SET
1482 005402  011100                        MOV     (R1),R0                 ;POINTER TO BIT DEFINITION
1483 005404  112022                 11$:   MOVB    (R0)+,(R2)+             ;MOVE ASCIZ TO BUFFER
1484 005406  001376                        BNE     11$                     ;MOVE ALL BITS
1485 005410  112762  000054  177777        MOVB    #',,-1(R2)              ;INSERT A COMMA TO TERMINATE
1486 005416  005721                 13$:   TST     (R1)+                   ;POINT TO NEXT DESCRIPTION
1487 005420  000763                        BR      10$                     ;GET THE REMAINING BITS
1488 005422  105042                 15$:   CLRB    -(R2)                   ;TERMINATE THE LINE
1489 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  0127 6  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 E/ 'ENDED 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$:    PRINTB  #EPRT1                  ;PRINT THE ERROR MESSAGE
                005646  012746  005676                  MOV     #EPRT1,-(SP)
                005652  012746  000001                  MOV     #1,-(SP)
                005656  010600                          MOV     SP,R0
                005660  104414                          TRAP    C$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'
```

```
1520 005737      045      116      045  EPRT2:   .ASCIZ  '%N%A ******CHECK PARITY SWITCH IN TRANSPORT******%S'
1521 006021      045      116      045  EPRT3:   .ASCIZ  '%N%A ******POSSIBLE MEDIA RELATED ERROR - BAD TAPE******%S'
1522 006112      045      116      045  TSSRFOR:         .ASCIZ  '%N%A TSSR = %O6'
1523 006132      045      116      045  TEXASC:          .ASCIZ  '%N%A Extended Address Bits = %O6'
1524 006173      045      116      045  TCOASC:          .ASCIZ  '%N%A Termination Class Code = %T'
1525 006234      045      116      045  TFCASC:          .ASCIZ  '%N%A Fatal Termination Class Code = %T'
1526 006303      045      116      045  TSSDEF:          .ASCIZ  '%N%A TSSR Bits Set: %T'
1527 006332      045      116      045  AMBTSSR:         .ASCIZ  '%N%A TSSR Contents Are Ambiguous'
1528                                            .EVEN
1529 006374  006414  006437  006465  TCOCOD:  .WORD   1$,2$,3$,4$,5$,6$,7$,8$
1530 006414      116      157      162  1$:      .ASCIZ  'Normal Termination'
1531 006437      124      145      162  2$:      .ASCIZ  'Termination Condition'
1532 006465      124      141      160  3$:      .ASCIZ  'Tape Status Alert'
1533 006507      106      165      156  4$:      .ASCIZ  'Function Reject'
1534 006527      122      145      143  5$:      .ASCIZ  'Recoverable Error - Tape Position One Record Down'
1535 006611      122      145      143  6$:      .ASCIZ  'Recoverable Error - Tape Was Not Moved'
1536 006660      125      156      162  7$:      .ASCIZ  'Unrecoverable Error'
1537 006704      106      141      164  8$:      .ASCIZ  'Fatal Controller Error'
1538                                            .EVEN
1539
1540 006734  006744  007000  007011  TSFCOD:  .WORD   1$,2$,3$,4$
1541 006744      111      156      164  1$:      .ASCIZ  'Internal Diagnostic Failure'
1542 007000      122      145      163  2$:      .ASCIZ  'Reserved'
1543 007011      102      165      163  3$:      .ASCIZ  'Bus Interface or Sanity Check Error'
1544 007055      122      145      163  4$:      .ASCIZ  'Reserved'
1545                                            .EVEN
```

PRIPKT - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET

```
1547                                            .SBTTL  PRIPKT  - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET
1548
1549                                    ;+
1550                                    ;THIS ROUTINE PRINTS THE ADDRESS AND CONTENTS OF A COMMAND PACKET.
1551                                    ;THIS ROUTINE IS NORMALLY ONLY CALLED FROM A PRINT ROUTINE.
1552                                    ;
1553                                    ;INPUT:
1554                                    ;
1555                                    ;       R0      NUMBER OF WORDS IN PACKET
1556                                    ;       R3      HIGH ORDER COMMAND PACKET ADDRESS
1557                                    ;       R4      ADDRESS OF COMMAND PACKET
1558                                    ;
1559                                    ;       NOTE:   R3 IS IGNORED IF THE KTENABLE FLAG IS CLEAR.
1560                                    ;-
1561
1562 007066                             PRIPKT::
1563 007066                                     SAVREG                  ;SAVE THE REGISTERS
1564 007072  010005                             MOV     R0,R5           ;SAVE NO. OF WORDS IN PACKET
1565 007074  005737  003106                     TST     KTENABLE        ;ABOVE 28K UNDER TEST?
1566 007100  001001                             BNE     10$             ;BR IF YES
1567 007102  005003                             CLR     R3              ;SET HIGH ORDER ADDRESS TO 0
1568 007104  010301                     10$:    MOV     R3,R1           ;COPY HIGH ORDER ADDRESS
1569 007106  010400                             MOV     R4,R0           ;GET LOWER ADDRESS
1570 007110  006100                             ROL     R0              ;SHIFT BIT 15 INTO C BIT
1571 007112  006101                             ROL     R1              ;AND INTO HIGH ORDER.
1572 007114                                     PRINTB  #PKTADD,R1,R4   ;PRINT PACKET ADDRESS
     007114  010446                             MOV     R4,-(SP)
     007116  010146                             MOV     R1,-(SP)
     007120  012746  007272                     MOV     #PKTADD,-(SP)
     007124  012746  000003                     MOV     #3,-(SP)
     007130  010600                             MOV     SP,R0
     007132  104414                             TRAP    C$PNTB
     007134  062706  000010                     ADD     #10,SP
1573 007140  010300                     15$:    MOV     R3,R0           ;GET HIGH ORDER ADDRESS
1574 007142  001404                             BEQ     20$             ;BR IF NOT ABOVE 28K.
1575 007144  010401                             MOV     R4,R1           ;GET LOW ORDER ADDRESS
1576 007146  004737  020274                     JSR     PC,SETMAP       ;SETUP PAR6 MAPPING FOR 18 BIT ADDRESS
1577 007152  010004                             MOV     R0,R4           ;GET RETURNED PAR6 ADDRESS BIAS
1578 007154  005001                     20$:    CLR     R1              ;SAVE WORD NUMBER
1579 007156  012402                     25$:    MOV     (R4)+,R2        ;GET PACKET CONTENTS
1580 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$PNTB
     007200  062706  000010                     ADD     #10,SP
1581 007204  005201                             INC     R1              ;NEXT WORD NUMBER
1582 007206  020105                             CMP     R1,R5           ;DONE ALL PACKET WORDS?
1583 007210  002762                             BLT     25$             ;LOOP TILL ALL DONE
1584 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
```

```
CZTKHA TK-25 FRT END FUNC 04    MACRO M1200  20-APR-84 08:13  PAGE 34-1                                SEQ 46
PRIPKT  - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET

   1585 007232  000207                          RTS     PC              ;RETURN
   1586
   1587 007234     045     116     045  PKTFRM: .ASCIZ  '%N%A Packet Word #%D1%A = %06'
   1588 007272     045     116     045  PKTADD: .ASCIZ  '%N%A Packet Address = %01%05'
   1589
   1590 007327     045     116     045  PKTNEW: .ASCIZ  '%N%N%A  '
   1591                                  .EVEN
   1592
```

```
                                .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
                        ;
                        ;-

007340                  PRIBXOR::
007340                          SAVREG                          ;SAVE THE REGISTERS
007344  010203                  MOV     R2,R3                   ;EXPECTED DATA
007346                          XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007356  012700  177400          MOV     #^C<377>,R0             ;BYTE MASK
007362  040001                  BIC     R0,R1                   ;SAVE LOW BYTE RECV
007364  040002                  BIC     R0,R2                   ;SAVE LOW BYTE EXPD
007366  040003                  BIC     R0,R3                   ;SAVE LOW BYTE XOR
007370                          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: %03%A RECV: %03%A XOR: %03'
                                .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: %06%A RECV: %06%A XOR: %06'
                                        .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 = %O%'
                                        .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
```

PRIADD - PRINT MEMORY ERROR ADDRESS

```
1708                                    ;
1709                                    ;-
1710 007706                             PRIADD:
1711 007706                                     SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
1712 007712  013700  002204                     MOV     ERRHI,R0        ;GET HIGH ADDRESSS
1713 007716  013701  002206                     MOV     ERRLO,R1        ;GET LOW ADDRESS
1714 007722  010102                             MOV     R1,R2           ;COPY LOW ADDRESS
1715 007724  006101                             ROL     R1              ;SHIFT BIT 15 TO C BIT
1716 007726  006100                             ROL     R0              ;SHIFT INTO HIGH ORDER
1717 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
1718 007754  000207                             RTS     PC              ;RETURN
1719
1720 007756     045     116     045  PRIA0:     .ASCIZ  '%N%A MEMORY ERROR ADDRESS = %01%05'
1721                                            .EVEN
1722
1723
1724                                            .SBTTL  PRITADD - PRINT MEMORY TEST ADDRESS
1725                                    ;*
1726                                    ;
1727                                    ;PRINT MEMORY ADDRESS
1728                                    ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
1729                                    ;
1730                                    ; IMPLICIT INPUTS
1731                                    ;
1732                                    ;       ERRHI   - HIGH ORDER ADDRESS
1733                                    ;       ERRLO   - LOW ORDER ADDRESS
1734                                    ;
1735                                    ;-
1736 010022                             PRITADD:
1737 010022                                     SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
1738 010026  013700  002204                     MOV     ERRHI,R0        ;GET HIGH ADDRESSS
1739 010032  013701  002206                     MOV     ERRLO,R1        ;GET LOW ADDRESS
1740 010036  010102                             MOV     R1,R2           ;COPY LOW ADDRESS
1741 010040  006101                             ROL     R1              ;SHIFT BIT 15 TO C BIT
1742 010042  006100                             ROL     R0              ;SHIFT INTO HIGH ORDER
1743 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
1744 010070  000207                             RTS     PC              ;RETURN
1745
1746 010072     045     116     045  PRIT0:     .ASCIZ  '%N%A MEMORY TEST ADDRESS = %01%05'
1747                                            .EVEN
1748
1749
1750
```

```
                        .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     #500.,SDELAY    ;SET UP DELAY
010146  012737  140010  010320          MOV     #140010,80$     ;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$:     BIC     #BIT15,R3       ;CLEAR DIRECTION BIT
010172  010337  010322                  MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010176  052737  000400  010320          BIS     #BIT8,80$       ;SET REVERSE BIT IN COMMAND PACKET
010204  012704  010320          10$:    MOV     #80$,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     #250,(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
```

```
1818                                    ;
1819                                    ;
1820                                    ;
1821                                    ;PACKET FOR SPACE COMMAND
1822                                    ;
1824 010312                             .BLKB   10-<.-TUV2A&7>
1826                                    ;
1827                                    ;COMMAND WORD
1828 010320  000000                     80$:    .WORD
1829                                    ;NUMBER OF RECORDS TO BE SPACED OVER WORD
1830 010322  000000                     90$:    .WORD
1831 010324  000000                             .WORD
1832 010326  000000                             .WORD
1833 010330  000000                     SDELAY: .WORD   0               ;DELAY COUNTER
1834                                            .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::
                        SAVREG                  ;SAVE THE GENERAL REGISTERS
010332  005037  002176  CLR     BENBSW          ;CLEAR BUFFER ENABLE SWITCH
010336  010465  177776  10$:    MOV     R4,TSDB(R5)     ;SEND OUT COMMAND
010342  004737  017242  JSR     PC,CHKTSSR      ;WAIT FOR SSR
010346  103401          BCS     20$             ;BR. IF SSR IS SET AND OK
010350  000423          BR      60$             ;BR IF TROUBLE CARRY = CLEAR
010352  016501  000000  20$:    MOV     TSSR(R5),R1     ;READ TSSR
010356  012702  000200  MOV     #SSR,R2         ;SET UP EXPECTED
010362  032701  000100  BIT     #OFL,R1         ;WAS OFF LINE SET IN TSSR
010366  001402          BEQ     25$             ;BR. IF NO OFL SET
010370  052702  000100  BIS     #OFL,R2         ;MAKE THEM LOOK ALIKE
010374  020201          25$:    CMP     R2,R1           ;ARE THEY OK
010376  001401          BEQ     40$             ;BR. IF EQUAL - OK
010400  000407          BR      60$             ;TROUBLE EXIT
010402  062704  000010  40$:    ADD     #8.,R4          ;POINT TO WRT CHARA DATA PACKET
010406  011403          MOV     (R4),R3         ;GET ADDRESS OF MESSAGE BUFFER
010410  010337  002720  MOV     R3,MESBFA       ;STORE FOR PRINT ROUTINES
010414  000261          SEC                     ;SET CARRY NO TROUBLE
010416  000401          BR      70$             ;EXIT
010420  000241          60$:    CLC             ;CARRY CLEAR = ERROR
010422  016500  000000  70$:    MOV     TSSR(R5),R0     ;RETURN TSSR CONTENTS
010426  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
                                ;
                                ;
                                ;-
                                REWIND::
                                        SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
010434                                  MOV     #RWPACK,R4      ;GET PACKET ADDRESS
010440  012704  010530                  MOV     R4,TSDB(R5)     ;SEND PACKET ADDRESS TO EXECUTE
010444  010465  177776                  MOV     #360.,R3        ;ENOUGH TIME FOR 2400' REEL TO REWIND
010450  012703  000550          10$:    JSR     PC,WAITF        ;WAIT FOR SSR TO SET
010454  004737  017124                  BCS     20$             ;LEAVE WHEN SSR IS SET
010460  103417                          DELAY   250.            ;WAIT FOR .25 SECONDS
010462                                  MOV     #250.,(PC)+
010462  012727  000372                  .WORD   0
010466  000000                          MOV     L$DLY,(PC)+
010470  013727  002116                  .WORD   0
010474  000000                          DEC     -6(PC)
010476  005367  177772                  BNE     .-4
010502  001375                          DEC     -22(PC)
010504  005367  177756                  BNE     .-20
010510  001367                          DEC     R3              ;BUMP COUNTER DOWN
010512  005303                          BNE     10$             ;KEEP GOING
010514  001357                          CLC                     ;CLEAR CARRY TO SET ERROR
010516  000241                  20$:    MOV     R4,R0           ;PASS THE PACKET ADDRESS
010520  010400                          RTS     PC              ;RETURN
010522  000207                          .BLKB   10 <. TUV2A67>
010524                          RWPACK:
010530                                  .WORD   102010          ;POSTION COMMAND (REWIND)
010530  102010                          .WORD   0               ;NOT USED
010532  000000
```

```
                        .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:
                ;
                ;
                ;-
                RAMER::
                        SAVREG                          ;SAVE THE GENERAL REGISTERS
010636  013705  011022          MOV     RAMR5H,R5       ;RESET R5 TO FIRST DEVICE REGISTER
010642  012701  002210          MOV     #RAMDATA,R1     ;ADDRESS TO SAVE THE RAM DATA
010646  013702  011020          MOV     RAMHLD,R2       ;BYTE ADDRESS OF THE FIRST RAM DATA
010652  013703  002250          MOV     RAMSIZ,R3       ;SET THE SIZE OF THE READ UP
010656  004737  017242  10$:    JSR     PC,CHKTSSR      ;WAIT FOR THE SSR TO SET
010662  110265  177777          MOVB    R2,TSDBH(R5)    ;SELECT NEXT RAM ADDRESS
010666  004737  017242          JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
010672  116521  177776          MOVB    TSBAL(R5),(R1)+ ;READ THE RAM DATA
010676  062702  000001  20$:    ADD     #1,R2           ;ADDRESS OF THE NEXT RAM LOCATION
010702  077313                  SOB     R3,10$          ;NUMBER OF LOCATIONS COUNTER
010706  013704  002250          MOV     RAMSIZ,R4       ;GET THE RAM SIZE
010710  013702  011020          MOV     RAMHLD,R2       ;GET THE STARTING RAM ADDRESS
010714  060204                  ADD     R2,R4           ;CALCULATE THE END ADDRESS
010716  162704  000001          SUB     #1,R4           ;CORRECT VALUE OF PRINTOUT
010722                          PRINTX  #RAMIOP,R2,R4   ;RAM ADDRESS = 10 - 17, ETC.
010722  010446                  MOV     R4,-(SP)
010724  010246                  MOV     R2,-(SP)
010726  012746  011024          MOV     #RAMIOP,-(SP)
010732  012746  000003          MOV     #3,-(SP)
010736  010600                  MOV     SP,R0
010740  104415                  TRAP    C$PNTX
010742  062706  000010          ADD     #10,SP
010746  012701  002210          MOV     #RAMDATA,R1     ;ADDRESS OF WHERE RAM DATA IS
010752  013703  002250          MOV     RAMSIZ,R3       ;THE SIZE OF THE RAM FIELD READ
010756  005004          30$:    CLR     R4              ;NO EXTRA DATA LEFT OVER
010760  112104                  MOVB    (R1)+,R4        ;PICK UP BYTE OF RAM DATA
010762  042704  177400          BIC     #177400,R4      ;GET RID OF SIGN EXTEND
010766                          PRINTX  #RAMPD,R4       ;"010 211 111 222 377 000 123 134 ETC."
010766  010446                  MOV     R4,-(SP)
010770  012746  011075          MOV     #RAMPD,-(SP)
010774  012746  000002          MOV     #2,-(SP)
011000  010600                  MOV     SP,R0
011002  104415                  TRAP    C$PNTX
011004  062706  000006          ADD     #6,SP
011010  077316                  SOB     R3,30$          ;LOOP UNTIL ALL PRINTED
```

```
2038 011016  000207                  50$:    RTS     PC              ;RETURN
2039
2040 011020  000000                  RAMHLD: .WORD   0               ;RAM ADDR HOLDER 1ST ADDRESS
2041 011022  000000                  RAMR5H: .WORD   0               ;HOLDS R5 FOR LATER
2042 011024     045     116     045  RAMIOP: .ASCIZ  '<N><A Ram Address (Octal) = <03><A - <03><N>'
2043 011075     045     101     040  RAMPD:  .ASCIZ  '<A <03><A '
2044                                         .EVEN
2045
```

```
                                        .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::
                                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
```

```
2207 011454  000241                        CLC                     ;SET FAILURE
2208 011456  000401                        BR      60$             ;
2209 011460  000261                55$:    SEC                     ;SET SUCCESS
2210 011462  000207                60$:    RTS     PC              ;RETURN
2211
2212 011464     120     122     117  DEBUGMSG:      .ASCIZ  'PROGRAM INTERNAL ERROR  CKMSG2 MESSAGE BUFFER EXCEEDED-';@@D
2213 011554     045     116     045  FERCM:  .ASCII  /%N%A  ***/
2214 011565     040     040     124  ERCM:   .ASCIZ  /  TSSR ERROR CODE REC'D = /
2215 011620     056     056     056  SIMSG:  .ASCIZ  /.... AFTER DOING SOFT INIT/
2216 011653     124     105     123  TINERR: .ASCIZ  /TEST: .../
2217                                   .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 (  IER 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
                                ;
                                ;-
```

```
                                        BGNMSG  PKTGETS
                                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
                                        ENDMSG
                                L10005:
011744  104423                          TRAP    C$MSG


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

                                        BGNMSG  SFFMSG
                                SFFMSG::
011746  004737  005270                  JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
                                        ENDMSG
                                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 TS CLEAR
                                ;-
                                        BGNMSG  PKTMES
                                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
                                        ENDMSG
                                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  004737  010022                  JSR     PC,PRITADD      ;PRINT MEMORY TEST ADDRESS
011776  016501  000000                  MOV     TSSR(R5),R1     ;GET CURRENT TSSR
012002  004737  005270                  JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
012006                                  ENDMSG
012006                          L10010:
012006  104423                          TRAP    C$MSG


                                        .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  012700  000007                  MOV     #7,R0           ;ASSUME NO EXT FEATURES
012014  004737  015426          5$:     JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012020                                  ENDMSG
012020                          L10011:
012020  104423                          TRAP    C$MSG
```

```
2351                                            .SBTTL  FIFEXP  - PRINT FIFO EXP/RECV DATA
2352                                    ;+
2353                                    ;
2354                                    ;PRINT ROUTINE TO PRINT FIFO EXP/RECV DATA
2355                                    ;
2356                                    ;       R1      - BYTE COUNT
2357                                    ;
2358                                    ;IMPLICIT INPUTS:
2359                                    ;
2360                                    ;       EXPMSG  - EXPECTED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY
2361                                    ;       RECMSG  - RECEIVED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY)
2362                                    ;-
2363 012022                                    BGNMSG  FIFEXP
     012022                             FIFEXP::
2364 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$PNTX
     012040  062706  000006                    ADD     #6,SP
2365 012044                                    PRINTX  #FIF2MSG        ;PRINT HEADER MSG
     012044  012746  012143                    MOV     #FIF2MSG,-(SP)
     012050  012746  000001                    MOV     #1,-(SP)
     012054  010600                            MOV     SP,R0
     012056  104415                            TRAP    C$PNTX
     012060  062706  000004                    ADD     #4,SP
2366 012064  010100                            MOV     R1,R0           ;GET BYTE COUNT
2367 012066  004737  015776                    JSR     PC,PRBYTEXP     ;PRINT FIFO BYTES IN ERROR
2368 012072                                    ENDMSG
     012072                             L10012:
     012072  104423                            TRAP    C$MSG
2369 012074     045     116     045   FIF1MSG:        .ASCIZ  '%N%A NUMBER OF BYTES TRANSFERRED = %D2'
2370 012143     045     116     045   FIF2MSG:        .ASCIZ  '%N%A FIFO DATA BYTES IN ERROR:'
2371                                            .EVEN
2372
```

```
                                        .SBTTL  MSGSTAT - PRIN' 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$:.ASCIZ  '<CR><LF>A Tape Bus Signals in Word #8:'
012324     045     116     045  2$:.ASCIZ  '<CR><LF>A         PARERR<15>  IEOT  <12>  IFMK  <9>  IRDY<6>  IRWD<2>'
012415     045     116     045  3$:.ASCIZ  '<CR><LF>A         IRESV2<14>  IIDENT<11>  IHER  <8>  IONL<5>  IFBY<1>'
012506     045     116     045  4$:.ASCIZ  '<CR><LF>A         IRESV1<13>  ICER  <10>  ISPEED<7>  ILDP<4>  IFPT<0>'
012577     045     116     045  5$:.ASCIZ  '<CR><LF>A Tape Bus Signals in Word #9:'
012641     045     116     045  6$:.ASCIZ  '<CR><LF>A         DATMIS<7>  ILW<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
```

MSGLOOP - PRINT LOOPBACK HEADER AND MESSAGE BUFFERS

```
2422 012722  012100                  10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
2423 012724  001410                          BEQ     20$             ;BR IF YES
2424 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$PNTX
     012740  062706  000004                  ADD     #4,SP
2425 012744  000766                          BR      10$             ;DO ANOTHER MSG LINE
2426 012746  012700  000012          20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
2427 012752  004737  015426                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
2428 012756                                  ENDMSG
     012756                          L10014:
     012756  104423                          TRAP    C$MSG
2429
2430 012760  013000  013053  013152  LOOPCOD:        .WORD   1$,2$,3$,4$,5$,6$,7$,0
2431 013000    045     116     045  1$:.ASCIZ  '%NMA Tape Bus Loopback Signals in Word #0:'
2432 013053    045     116     045  2$:.ASCIZ  '%NMA      PARERR<15>          IRESV2<14>          IRESV1<13>'
2433 013152    045     116     045  3$:.ASCIZ  '%NMA IMISP=>IEOT<12>    IWRT=>IIDENT<11>    IREV  =>ICER  <10>'
2434 013251    045     116     045  4$:.ASCIZ  '%NMA IWFM =>IFMK<09>    IEDIT=>IHER <08>    IFAD  =>ISPEED<07>'
2435 013350    045     116     045  5$:.ASCIZ  '%NMA ITADO=>IRDY<06>    ITAD1=>IONL <05>    IERASE=>ILDP  <04>'
2436 013447    045     116     045  6$:.ASCIZ  '%NMA IREW =>IDBY<03>    IRWU =>IRWD <02>    IFEN  =>IFBY  <01>'
2437 013546    045     116     045  7$:.ASCIZ  '%NMA IGO  =>IFPT<00>'
2438                                         .EVEN
2439
```

```
2441                                            .SBTTL  MSGSUB - PRINT WRITE SUBSYSTEM MESSAGE BUFFER
2442                                    ;+
2443                                    ;
2444                                    ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
2445                                    ;
2446                                    ;
2447                                    ;IMPLICIT INPUTS:
2448                                    ;
2449                                    ;       EXPMSG  - EXPECTED MESSAGE BUFFER
2450                                    ;       RECMSG  - RECEIVED MESSAGE BUFFER
2451                                    ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
2452                                    ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
2453                                    ;-
2454 013574                                    BGNMSG  MSGSUB
     013574                             MSGSUB::
2455 013574  012700  000012                    MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
2456 013600  004737  015426                    JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
2457 013604                                    ENDMSG
     013604                             L10015:
     013604  104423                            TRAP    C$MSG
2458
2459
2460
2461
2462
2463                                            .SBTTL  MEMADD - PRINT MEMORY ADDRESS DATA ERROR
2464                                    ;+
2465                                    ;
2466                                    ;PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
2467                                    ;
2468                                    ;IMPLICIT INPUTS:
2469                                    ;
2470                                    ;       ERRHI   - MEMORY ERROR HIGH ORDER ADDRESS
2471                                    ;       ERRLO   - MEMORY ERROR LOW ORDER ADDRESS
2472                                    ;       EXP     - EXPECTED DATA
2473                                    ;       RECV    - RECEIVED DATA
2474                                    ;-
2475 013606                                    BGNMSG  MEMADD
     013606                             MEMADD::
2476 013606  004737  007706                    JSR     PC,PRIADD       ;PRINT MEMORY ADDRESS IN ERROR
2477 013612  013701  002200                    MOV     EXPD,R1         ;GET EXPD DATA
2478 013616  013702  002202                    MOV     RECV,R2         ;GET RECEIVED DATA
2479 013622  004737  007470                    JSR     PC,PRIXOR       ;PRINT EXPD/RECV
2480 013626                                    ENDMSG
     013626                             L10016:
     013626  104423                            TRAP    C$MSG
2481
```

```
                                        .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
                                ;-
                                PRAMPKT:
                                        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
```

PRMESS - PRINT CONTENTS OF MESSAGE BUFFER

```
                                        .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$PNTX
                014304  062706  000006                  ADD     #6,SP
     2572       014310                                  PRINTX  #XSOCON,(R5)+   ;PRINT "XSTAT0 CONTENTS       ="
                014310  012546                          MOV     (R5)+,-(SP)
                014312  012746  015202                  MOV     #XSOCON,-(SP)
                014316  012746  000002                  MOV     #2,-(SP)
                014322  010600                          MOV     SP,R0
                014324  104415                          TRAP    C$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
```

```
CZTKHA TK-25 FRT END FUNC 04    MACRO M1200  20-APR-84 08:13  PAGE 53-2                                    SEQ 73
PRMESS  - PRINT CONTENTS OF MESSAGE BUFFER

 2580 014454  012737  000010  002250          MOV     #8.,RAMSIZ      ;RAM FIELD IS 8 BYTES LONG
 2581 014462  012737  000020  011020          MOV     #20,RAMHLD      ;FIELD STARTS AT 20 OCTAL (10 HEX)
 2582 014470  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
 2583 014474  012737  000040  011020          MOV     #40,RAMHLD      ;FIELD STARTS AT 40 OCTAL (20 HEX)
 2584 014502  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
 2585 014506  012737  000060  011020          MOV     #60,RAMHLD      ;FIELD STARTS AT 60 OCTAL (30 HEX)
 2586 014514  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
 2587 014520  012737  000020  002250          MOV     #16.,RAMSIZ     ;RAM FIELD IS SIXTEEN BYTES LONG
 2588 014526  012737  000100  011020          MOV     #100,RAMHLD     ;FIELD STARTS AT 100 OCTAL (40 HEX)
 2589 014534  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
 2590 014540  000207                  50$:    RTS     PC              ;RETURN
 2591 014542     045     116     045  RAMFHR: .ASCIZ  '%N%A ********** SPECIAL CONTROLLER RAM MEMORY DUMP **********'
 2592 014640     045     116     045  MESBFN: .ASCIZ  '%N%A MESSAGE BUFFER CONTENTS PROBABLY NOT VALID'
 2593 014720     045     116     045  PROASC: .ASCIZ  '%N%A Message Buffer Address = %01%05'
 2594 014765     045     116     045  PR1ASC: .ASCIZ  '%N%A Message Buffer Contents:'
 2595
 2596 015023     045     116     045  MESHEA: .ASCIZ  '%N%A Message Buffer Header      = %06'
 2597 015070     045     116     045  DATAFL: .ASCIZ  '%N%A Data Field Length          = %06'
 2598 015135     045     116     045  RBPCRA: .ASCIZ  '%N%A Residual Byte Counter      = %06'
 2599 015202     045     116     045  XS0CuN: .ASCIZ  '%N%A XSTAT0 Contents            = %06'
 2600 015247     045     116     045  XS1CON: .ASCIZ  '%N%A XSTAT1 Contents            = %06'
 2601 015314     045     116     045  XS2CON: .ASCIZ  '%N%A XSTAT2 Contents            = %06'
 2602 015361     045     116     045  XS3CON: .ASCIZ  '%N%A XSTAT3 Contents            = %06'
 2603                                  .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::
                                        SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
015426  010005                          MOV     R0,R5           ;SAVE NUMBER OF WORDS
015432  013700  002254                  MOV     RCVLOADD,R0     ;GET RECV LOW ADDRESS
015434  010004                          MOV     R0,R4           ;COPY LOW ADDRESS
015440  013701  002252                  MOV     RCVHIADD,R1     ;GET RECV HIGH ADDRESS
015442  006100                          ROL     R0              ;SHIFT BIT15 TO C BIT
015446  006101                          ROL     R1              ;SHIFT TO HIGH ORDER FOR PRINTOUT
015450                                  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
```

```
CZTKHA TK-25 FRT END FUNC #4     MACRO M1200  20-APR-84 08:13  PAGE 54-1                                    SEQ 75
PRMSGEXP - PRINT EXPD/RECV MESSAGE BUFFERS

   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 #%D2%A  EXPD: %06%A  RECV: %06%A  XOR: %06'
   2645                                  .EVEN
   2646
```

PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER

```
                                        .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$             ;@@D
016142  000404                          BR      35$                     ;@@D
016144                          30$:
016144                                  FORCERROR  27$,NOTSSR           ;@@D
016154                          35$:                                    ;@@D
016154  005204                          INC     R4                      ;NUMBER OF THE NEXT
016156  020405                          CMP     R4,R5                   ;DONE ALL YET?
016160  002001                          BGE     50$                     ;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
```

```
CZIKHA IK-25 FRI END FUNC #4    MACRO M1200  20-APR-84 08:13  PAGE 55-1                                    SEQ 77
PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER

      016204  062706  000006                  ADD     #6,SP
 2691 016210  000207                          RTS     PC              ;RETURN
 2692
 2693 016212     045     116     045  PRBMSG: .ASCIZ  '<N><A>   BYTE #<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                  PRBEXP: .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
                                ;
                                ;-
                                ;
                                        BGNMSG  EXPBREC
016356                          EXPBREC::
016356  004737  007340                  JSR     PC,PRIBXOR      ;PRINT THE DATA
016362                                  ENDMSG
016362                          L10020:
016362  104423                          TRAP    C$MSG
                                ;
                                ;
                                ;
                                ;
                                        .SBTTL  RAMERR  - PRINT RAM AND PACKET DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                ;
                                ;INPUTS:
                                ;
                                ;       R4      POINTER TO COMMAND PACKET
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       RAMDATA         DATA AS READ FROM THE RAM
                                ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       RAMSIZ  SET TO 0
                                ;-
                                ;
                                        BGNMSG  RAMERR
016364                          RAMERR::
016364  004737  013630                  JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
016370                                  ENDMSG
016370                          L10021:
016370  104423                          TRAP    C$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
                                        ;-
                                        
                                                BGNMSG  RAMTADD
                                        RAMTADD::
016372  004737  010022                          JSR     PC,PRITADD      ;PRINT TEST ADDRESS
016376  004737  013630                          JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
                                                ENDMSG
                                        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
                                        ;-
                                        
                                                BGNMSG  RAMEXP
                                        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
                                                ENDMSG
                                        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
```

```
2820                                    ;-
2821
2822 016426                                     BGNMSG  TIMEXP
     016426                             TIMEXP::
2823 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$PNTX
     016442  062706  000004                     ADD     #4,SP
2824 016446  004737  007470                     JSR     PC,PRIXOR       ;PRINT THE DATA
2825 016452                                     ENDMSG
     016452                             L10024:
     016452  104423                             TRAP    C$MSG
2826
2827
2828 016454    045    116    045      TIMSGO: .ASCIZ  '%N%A TIMER A STATUS IS IN BIT 3%N%A TIMER B STATUS IS IN BIT 2'
2829                                    .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)
                                ;
                                ;-

                                        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)
015574  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 CPU 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

                                        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
```

```
3034                                    .SBTTL  CHKTSSR - CHECK TSSR FOR READY
3035
3036                                ;+
3037                                ;
3038                                ;THIS ROUTINE WAITS FOR READY IN THE TSSR
3039                                ;AND TESTS FOR AMBIGUOUS BIT SETTINGS IN TSSR.
3040                                ;
3041                                ;INPUT:
3042                                ;
3043                                ;       R5      ADDRESS OF CSR REGISTERS
3044                                ;
3045                                ;OUTPUT:
3046                                ;
3047                                ;       R0      CONTENTS OF TSSR
3048                                ;       CARRY   SET - OKAY
3049                                ;               CLR - NOT READY AMBIGUOUS, OR SC SET
3050                                ;
3051                                ;-
3052
3053 017242                        CHKTSSR:
3054 017242  004737  017124                JSR     PC,WAITF        ;WAIT FOR READY
3055 017246  103014                        BCC     20$             ;BRANCH IF TIME OUT
3056 017250  004737  016720                JSR     PC,CHKAMB       ;TSSR AMBIGOUS?
3057 017254  103006                        BCC     10$             ;BR IF YES
3058 017256  032700  100000                BIT     #SC,R0          ;SPECIAL CONDITION SET?
3059 017262  001405                        BEQ     15$             ;BR IF NO
3060 017264  032700  074000                BIT     #<SCE!BIE!RMR!NXM>,R0   ;ANY ERROR BITS SET?
3061 017270  001402                        BEQ     15$             ;BR IF NO
3062 017272  000241                10$:    CLC                     ;SET FAILURE
3063 017274  000401                        BR      20$             ;
3064 017276  000261                15$:    SEC                     ;SET SUCCESS
3065 017300  000207                20$:    RTS     PC              ;RETURN TO CALLER
```

```
3067                                            .SBTTL  XNXM    - CHECK FOR NONEXISTENT MEMORY
3068                                    ;+
3069                                    ; ROUTINE TO TEST FOR A NEXM IN THE RANGE (R1) THRU (R2).
3070                                    ; ON RETURN, IF "C" = 1, (R1) = NEXM ADDRESS.
3071                                    ;               "C" = 0, ALL ADDRESSES OK.
3072                                    ;
3073                                    ;CALL:  MOV ADR1,R1
3074                                    ;       MOV ADR2,R2
3075                                    ;       JSR PC,NXM
3076                                    ;       RETURN                  ;TEST "C" AND PROCEED.
3077                                    ;
3078 017302  012737  017334  000004    XNXM:   MOV     #2$,@#4         ; SET BUSERR VECTOR.
3079 017310  012737  000200  000006            MOV     #PRI04,@#6
3080 017316  005003                            CLR     R3              ;FLAG.
3081 017320  005711                    1$:     TST     (R1)            ;TEST THE ADDRESS(ES).
3082                                                                    ;IF ANY TRAP, CONTINUE AT 2$.
3083 017322  020102                            CMP     R1,R2           ;OTHERWISE, CONTINUE HERE.
3084 017324  001407                            BEQ     3$              ;BR IF FINISHED (NO NEXM'S).
3085 017326  062701  000002                    ADD     #2,R1           ;SET NEXT ADDRESS...
3086 017332  000772                            BR      1$              ;...AND CONTINUE.
3087
3088 017334  005103                    2$:     COM     R3              ;GOT ONE, SET FLAG...
3089 017336  012716  017344                    MOV     #3$,(SP)
3090 017342  000002                            RTI                     ;...AND DISMISS INTERRUPT...
3091 017344                            3$:     CLRVEC  #4              ;...AND GIVE BACK THE VECTOR.
     017344  012700  000004                    MOV     #4,R0
     017350  104436                            TRAP    C$CVEC
3092 017352  005703                            TST     R3              ;DID WE CATCH ONE ??
3093 017354  001401                            BEQ     .+4             ;NO, "C" = 0, SKIP NEXT.
3094 017356  000261                            SEC                     ;YES, "C" = 1, (R1) = NEXM ADDR.
3095 017360  000207                            RTS     PC
3096
3097
3098
3099
3100                                            .SBTTL  TSTLOOP - CHECK ITERATION COUNT
3101                                    ;+
3102                                    ; SUBROUTINE TO EXECUTE TEST ITERATIONS.
3103                                    ; EXIT WITH "C" SET IF LOOPS ALLOWED AND LOOP COUNT NON-ZERO.
3104                                    ; LOOP COUNTER IS SET BY "BEGIN.TEST" MACRO.
3105                                    ;
3106                                    ; CALL: LOOPTO  ARG
3107                                    ;
3108 017362                            TSTLOOP::
3109 017362  005737  002136                    TST     NOITS           ; ITERATIONS INHIBITED?
3110 017366  001006                            BNE     1$              ; YES.
3111 017370  005737  002154                    TST     QVP             ; NO.
3112 017374  100403                            BMI     1$              ;LOOPS DISALLOWED IN QUICK PASS.
3113 017376  005337  002166                    DEC     LOOPCNT         ; BUMP LOOP COUNTER.
3114 017402  001002                            BNE     2$
3115 017404  000241                    1$:     CLC                     ;LOOP DISALLOWED, OR DONE.
3116 017406  000401                            BR      3$
3117 017410  000261                    2$:     SEC                     ;LOOP ENABLED.
3118 017412  000207                    3$:     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
01741o  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
```

```
3286                                            .SBTTL  KTON,KTOFF      - ENABLE/DISABLE MEMORY MANAGEMENT
3287                                    ;
3288                                    ; SUBROUTINE - ENABLE MEM MGT.
3289                                    ;
3290 020234  005737  003104            KTON:    TST     KTFLG           ; GOT KT?
3291 020240  001403                             BEQ     1$              ; NO.
3292 020242  012737  000001  177572             MOV     #1,SR0          ; YES. ENABLE KT11.
3293 020250  000207                     1$:     RTS     PC
3294
3295
3296
3297                                    ;
3298                                    ; SUBROUTINE - DISABLE MEM MGT.
3299                                    ;
3300 020252  005737  003104            KTOFF:   TST     KTFLG           ; GOT KT11?
3301 020256  001405                             BEQ     1$              ; NO.
3302 020260  000240                             NOP
3303 020262  000240                             NOP
3304 020264  012737  000000  177572             MOV     #0,SR0          ; DISABLE KT.
3305 020272  000207                     1$:     RTS     PC
3306
3307
```

```
                        .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
```

```
3398                                            .SBTTL  CMPMEM  - COMPARE MEMORY TO BACKGROUND PATTERN
3399                                    ;+
3400                                    ; COMPARE MEMORY WITH A BACKGROUND PATTERN
3401                                    ;
3402                                    ; INPUTS:
3403                                    ;
3404                                    ;       R0 = BACKGROUND PATTERN
3405                                    ;       FREE    = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
3406                                    ;       KTFLG   = SET TO HIGHEST MEMORY LOCATION IF > 28K.
3407                                    ;
3408                                    ; OUTPUTS:
3409                                    ;
3410                                    ;       CARRY   - SET IF NO ERROR
3411                                    ;       CARRY   - CLR IF ERROR
3412                                    ;
3413                                    ; IMPLICIT OUTPUTS:
3414                                    ;
3415                                    ;       ERRHI   - ERROR HIGH ADDRESS
3416                                    ;       ERRLO   - ERROR LOW ADDRESS
3417                                    ;       EXPD    - EXPECTED DATA
3418                                    ;       RECV    - RECEIVED DATA
3419                                    ;-
3420 020564                            CMPMEM:
3421 020564                                    SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
3422 020570  010003                            MOV     R0,R3           ;COPY TEST PATTERN
3423 020572  004737  020252                    JSR     PC,KTOFF        ;DISABLE KT.
3424 020576  013701  003076                    MOV     FREE,R1         ;GET FIRST FREE LOCATION
3425 020602  013702  003100                    MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
3426 020606  020311                    10$:    CMP     R3,(R1)         ;FREE SPACE LOCATION EQUAL TO EXPD?
3427 020610  001411                            BEQ     15$             ;BR IF YES
3428 020612  010137  002206                    MOV     R1,ERRLO        ;SAVE ADDRESS IN ERROR
3429 020616  005037  002204                    CLR     ERRHI           ;NO HIGH ADDRESS
3430 020622  010337  002200                    MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
3431 020626  011137  002202                    MOV     (R1),RECV       ;SAVE RECV FOR ERROR REPORT
3432 020632  000474                            BR      50$             ;
3433 020634  005721                    15$:    TST     (R1)+           ;POINT TO NEXT ADDRESS
3434 020636  005302                            DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
3435 020640  003362                            BGT     10$             ;BR IF NO
3436 020642  005737  003104                    TST     KTFLG           ; GOT KT?
3437 020646  001472                            BEQ     55$             ; NO. GET OUT.
3438 020650  004737  020234                    JSR     PC,KTON         ; YES. ENABLE KT.
3439 020654  005000                            CLR     R0              ;HIGH ORDER ADDRESS START
3440 020656  013701  003110                    MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
3441         000006                            .REPT   6
3442                                            ROL     R1              ;CONVERT BLOCKS TO WORDS
3443                                            ROL     R0              ;MAKE IT DOUBLE PRECISION
3444                                            .ENDR
3445 020712  042701  000177                    BIC     #177,R1         ;ALINE 4K BOUNDARY
3446 020716  010046                            MOV     R0,-(SP)        ;SAVE HIGH ORDER
3447 020720  010146                            MOV     R1,-(SP)        ;SAVE LOW ORDER
3448 020722  004737  020274                    JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
3449 020726  010004                            MOV     R0,R4           ;COPY ADDRESS BIASED TO PAR6
3450 020730  012601                            MOV     (SP)+,R1        ;RESTORE LOW ORDER IN NON PAR6 FORMAT
3451 020732  012600                            MOV     (SP)+,R0        ;RESTORE HIGH ORDER IN NON PAR6 FORMAT
3452 020734  020314                    30$:    CMP     R3,(R4)         ;ABOVE 28K LOCATION EQUAL EXPD?
3453 020736  001411                            BEQ     32$             ;BR IF YES
3454 020740  010037  002204                    MOV     R0,ERRHI        ;SAVE HIGH ORDER IN ERROR
```

```
3455 020744  010137  002206                MOV     R1,ERRLO        ;SAVE LOW ORDER IN ERROR
3456 020750  010337  002200                MOV     R3,EXPD         ;SAVE EXPD FO  ERROR REPORT
3457 020754  011437  002202                MOV     (R4),RECV       ;SAVE RECV FOR ERROR REPORT
3458 020760  000421                        BR      50$             ;
3459 020762  062701  000002          32$:  ADD     #2,R1           ;UPDATE NON PAR6 ADDRESS
3460 020766  005500                        ADC     R0              ;MAKE IT DOUBLE PRECISION ADD
3461 020770  062704  000002                ADD     #2,R4           ;UPDATE PAR FORMAT ADDRESS
3462 020774  020427  160000                CMP     R4,#160000      ;END OF PAR6 MAPPING AREA?
3463 021000  103755                        BLO     30$             ;BR IF NO
3464 021002  162704  020000                SUB     #20000,R4       ;BACKUP INTO PAR6 MAPPING BEGIN
3465 021006  062737  000200  172354        ADD     #200,@#KIPAR6   ;POINT TO NEXT 4K BLOCK >28K.
3466 021014  023737  172354  003104        CMP     @#KIPAR6,KTFLG  ;END OF MEMORY?
3467 021022  101744                        BLOS    30$             ;BR IF NO
3468 021024  004737  020252          50$:  JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
3469 021030  000241                        CLC                     ;SET FAILURE
3470 021032  000403                        BR      60$             ;
3471 021034  004737  020252          55$:  JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
3472 021040  000261                        SEC                     ;SET SUCCESS
3473 021042  000207                60$:  RTS     PC
3474
```

```
                                        .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::
                                        SAVREG                          ;SAVE THE GENERAL REGISTERS
021104                          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$:     GMANID  MENASC,MENRES,D,-1,0,-1,NO
021226  104443                          TRAP    C$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::
021410                                  SAVREG                  ;SAVE THE REGISTERS
021414                                  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
```

ENVIRN - SETUP FREE DIAGNOSTIC SPACE

```
                                        .SBTTL  ENVIRN  - SETUP FREE DIAGNOSTIC SPACE
                                ;
                                ; SUBROUTINE TO SET-UP VARIOUS ENVIRONMENTAL PARAMETERS.
                                ;
021540                          ENVIRN: MEMORY  R0
021540  104431                         TRAP    C$MEM
021542  010037  003076                  MOV     R0,FREE         ; GET 1ST FREE ADDRESS...
021546  062737  000002  003076          ADD     #2,FREE
021554  011037  003100                  MOV     (R0),FRESIZ     ;...AND WORD COUNT.
021560  162737  000004  003100          SUB     #4,FRESIZ
021566  013702  002012                  MOV     L$UNIT,R2       ; GET NUMBER OF UNITS
021572  162737  000007  003100  10$:    SUB     #7,FRESIZ       ; TAKE AWAY 7 WORDS PER UNIT
021600  005302                          DEC     R2
021602  001373                          BNE     10$
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     #2,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
                                ;
                                ;
                                ;
```

```
3689                                            .SBTTL  PROTECTION TABLE
3690 021760                                     BGNPROT
     021760                             L$PROT::
3691 021760  177777  177777  177777             .WORD    1,  1, -1, -1  ;NO DEVICE PROTECTION REQUIRED.
3692 021770                                     ENDPROT
3693
```

```
                                        .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"
```

```
3736 022142                          20$:
3737 022142  012737  177777  002154          MOV     #-1,QVP         ;...QUICK VERIFY...
3738 022150  004737  021540                  JSR     PC,ENVIRN       ;SET ENVIRONMENT.
3739 022154  004737  021626                  JSR     PC,KTINIT       ;INITIALIZE KT MEMORY MANAGEMENT
3740 022160  012700  003134                  MOV     #ERTABL,R0
3741 022164  005020                  30$:    CLR     (R0)+           ;CLEAR THE ERROR TABLE
3742 022166  020027  003334                  CMP     R0,#ERTABE
3743 022172  103774                          BLO     30$
3744 022174  000404                          BR      4$
3745 022176  005037  002154          31$:    CLR     QVP
3746 022202  000137  022252                  JMP     PASRPT          ;GO REPORT THE STATUS
3747
3748 022206                          4$:
3749 022206  012737  177777  002152  NEWPAS: MOV     #-1,UNITN       ;INIT UNIT NUMBER...
3750 022214  005037  002170                  CLR     DEVCNT          ;CLEAR COUNT OF DEVICES RUNNING
3751 022220                          NXTU:   BREAK
     022220  104422                          TRAP    C$BRK
3752 022222  005237  002152                  INC     UNITN           ;...AND SET NEXT UNIT NUMBER.
3753 022226  023737  002152  002012          CMP     UNITN,L$UNIT
3754 022234  103423                          BLO     SETU
3755 022236  012737  177777  003064          MOV     #-1,DUFLG
3756 022244  000401                          BR      11$
3757 022246                                  DOCLN                   ;ABORT, NO MORE UNITS.
     022246  104444                          TRAP    C$DCLN
3758 022250  000240                  11$:    NOP
3759 022252                          PASRPT:
3760 022252  023727  002012  000001          CMP     L$UNIT,#1       ;HOW MANY UNITS SELECTED?
3761 022260  101752                          BLOS    NEWPAS          ;BR IF ONLY 1
3762 022262  005737  002170                  TST     DEVCNT          ;ARE ANY STILL RUNNING?
3763 022266  001747                          BEQ     NEWPAS          ;BR IF NO
3764 022270                                  RFLAGS  R0
     022270  104421                          TRAP    C$RFLA
3765 022272  032700  000100                  BIT     #ISR,R0         ;SHOULD WE PRINT STATISTICS
3766 022276  001343                          BNE     NEWPAS          ;BR IF NO
3767
3768 022300                                  DORPT
     022300  104424                          TRAP    C$DRPT
3769 022302  000741                          BR      NEWPAS
3770 022304                          10$:
3771
3772 022304                          SETU:   GPHARD  UNITN,R0        ;GET UNIT N P-TABLE POINTER.
     022304  013700  002152                  MOV     UNITN,R0
     022310  104442                          TRAP    C$GPHRD
3773 022312                                  BNCOMPLETE NXTU         ;BR IF UNIT NOT AVAILABLE.
     022312  103342                          BCC     NXTU
3774 022314  005037  003064                  CLR     DUFLG           ;CLEAR "DROPPED" FLAG.
3775 022320  005237  002170                  INC     DEVCNT
3776 022324  012001                          MOV     (R0)+,R1        ;GET 1ST REGISTER ADDRESS.
3777 022326  010137  002156                  MOV     R1,CSRADDR      ;ADDRESS OF REGISTERS OF UNIT UNDER TEST
3778
3779 022332  012001                          MOV     (R0)+,R1        ;GET VECTOR ADDRESS.
3780 022334  011002                          MOV     (R0),R2         ;GET INTERRUPT PRIORITY
3781 022336  010237  002162                  MOV     R2,IPRI         ;SET INTERRUPT PRIORITY.
3782 022342  010137  002160                  MOV     R1,IVEC         ;SET INTERRUPT VECTOR POINTER...
3783 022346  012721  017072                  MOV     #INTR,(R1)+     ;...VECTOR...
3784 022352  010221                          MOV     R2,(R1)+        ;...AND PRIORITY.
3785
```

```
3786 022354                                    1$:
3787                                           ;       TST     QVP             ;1ST PASS ??
3788                                           ;       BEQ     5$              ;NO, SKIP THE PASS 1 STUFF.
3789
3790                                           ;
3791                                           ;1ST PASS, CHECK THAT DEVICE ADDRESSES ARE VALID, AND
3792                                           ;THAT THE DISPLAY STATUS IS PROPERLY INITIALIZED.
3793                                           ;
3794 022354  013701  002152                            MOV     UNITN,R1
3795 022360  006301                                    ASL     R1
3796 022362  052761  100000  003134                     BIS     #BIT15,ERTABL(R1) ;SAY DEVICE RUNNING
3797 022370  005037  005236                            CLR     EXTA            ;CLEAR ERROR EXTENSION FLAG.
3798 022374  023727  002012  000001                     CMP     L$UNIT,#1       ;ARE WE TESTING MULTIPLE UNITS?
3799 022402  101416                                    BLOS    10$             ;BR IF NO.
3800 022404                                            RFLAGS  R0              ;YES -- GET OPERATOR FLAGS.
     022404  104421                                    TRAP    C$RFLA
3801 022406  032700  001000                            BIT     #PNT,R0         ;SHOULD WE PRINT UNIT #?
3802 022412  001412                                    BEQ     10$             ;BR IF NOT.
3803 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$PNTF
     022434  062706  000006                            ADD     #6,SP
3804 022440                                    10$:
3805 022440  005037  003066                            CLR     NODEV
3806 022444  013701  002156                            MOV     CSRADDR,R1      ;ADDRESS OF FIRST REGISTER
3807 022450  010102                                    MOV     R1,R2           ;START OF REGISTERS
3808 022452  062702  000000                            ADD     #TSSR,R2        ;ADDRESS OF TSSR REGISTER
3809 022456  004737  017302                            JSR     PC,XNXM         ;TEST BOTH CONTROLLER REGISTERS...
3810 022462  103005                                    BCC     2$              ;...AND BR IF ALL OK.
3811 022464  010137  003066                            MOV     R1,NODEV        ;FLAG DEVICE AS NON-EXISTENT
3812 022470  012737  177777  003064                     MOV     #-1,DUFLG       ;DROP THIS UNIT.
3813 022476                                    2$:
3814                                           ;
3815                                           ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
3816                                           ;
3817 022476                                    5$:     SETPRI  #PRI00          ;ENABLE INTERRUPTS.
     022476  012700  000000                            MOV     #PRI00,R0
     022502  104441                                    TRAP    C$SPRI
3818 022504                                            ENDINIT
     022504                                    L10030:
     022504  104411                                    TRAP    C$INIT
3819
3820 022506     045     116     045           PUNIT:  .ASCIZ  /%N%N%A***** TESTING UNIT %O2%A *****/
3821                                                    .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

                                        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-.
```

ADD AND DROP UNITS SECTIONS

```
3860 022726     045     116     045  1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
3861                                         .EVEN
3862 022756                                  ENDDU
     022756                             L10032:
     022756  104453                          TRAP    C$DU
3863                                 ;++
3864                                 ; AUTO-DROP CODE SECTION.
3865                                 ;--
3866 022760                                  BGNAUTO
     022760                             L$AUTO::
3867 022760  012703  000550                 MOV     #360.,R3        ;ENOUGH TIME FOR 2400' REEL TO REWIND
3868 022764  004737  017124            10$: JSR     PC,WAITF        ;WAIT FOR SSR TO SET
3869 022770  103420                        BCS     20$             ;LEAVE WHEN SSR IS SET
3870 022772                                 DELAY   250.            ;WAIT FOR .25 SECONDS
     022772  012727  000372                MOV     #250.,(PC)+
     022776  000000                        .WORD   0
     023000  013727  002116                MOV     L$DLY,(PC)+
     023004  000000                        .WORD   0
     023006  005367  177772                DEC     -6(PC)
     023012  001375                        BNE     .-4
     023014  005367  177756                DEC     -22(PC)
     023020  001367                        BNE     .-20
3871 023022  005303                        DEC     R3              ;BUMP COUNTER DOWN
3872 023024  001357                        BNE     10$             ;KEEP GOING
3873 023026  004737  020160                JSR     PC,CKDROP       ;TRY AND DROP UNIT
3874 023032                             20$:
3875 023032                                  ENDAUTO                 ; UNUSED.
     023032                             L10033:
     023032  104461                          TRAP    C$AUTO
```

CLEAN-UP AND REPORT CODING SECTIONS

```
                                        .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 (NEF) 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$CLP1
024044  016501  000000                          MOV     @SSR(R5),R1             ;GET THE TSSR
024050  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
024052  042702  000100                          BIC     #OFL,R2                 ;OFF LINE SHOULD NOT BE SET
024056  020102                                  CMP     R1,R2                   ;THEY SHOULD BE EQUAL
024060  001406                                  BEQ     26$                     ;BR, IF OFL IS NOT SET
```

```
4037 024062                              ERRDF   ERRNO,T290FL,EXPREC     ;DRIVE IS OFF LINE
     024062  104455                                                              TRAP    C$ERDF
     024064  000147                                                              .WORD   103
     024066  026552                                                              .WORD   T290FL
     024070  016350                                                              .WORD   EXPREC
4038 024072  004737  020160                  JSR     PC,CKDROP               ;TRY AND DROP DRIVE
4039 024076  004737  010434          26$:    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$CLP1
4076 024252  013701  026406                  MOV     T298FR+6,R1             ;GET XSTO STATUS WORD
4077 024256  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4078 024260  052702  002000                  BIS     #BIT10,R2               ;SET THE NEF BIT
4079 024264  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4080 024266  001406                          BEQ     170$                    ;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 >>>>>>>>>>>>
                                                                                                T1.2:
024312  104402                                                                                  TRAP    C$BSUB
024314  004737  032140                            CR      PC,T29REST              ;SET COMMAND PACKET
024320  004737  032232                          JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
024324  004737  032274                          JSR     PC,T29RT3               ;SET UP OTHER C MAND PACKET
024330  004737  016650                          JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
024334  103407                                  BCS     20$                     ;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     T298FR+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$ERHRD
     024470  000157                                                                  .WORD   111
     024472  027761                                                                  .WORD   T29BOT
     024474  016350                                                                  .WORD   EXPREC
4150 024476  012737  000001  026512  40$:     MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
4151 024504  012737  000400  026516          MOV     #256.,T29SZ             ;SET UP RECORD SIZE
4152 024512  012737  140005  026510          MOV     #140005,T29PK3          ;WRITE FORWARD,CVC=1,ACK COMMAND
4153 024520  012704  026510                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4154 024524  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4155 024530  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4156 024534  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4157 024540  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4160 024544  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4161 024546  001406                          BEQ     75$                     ;BR. IF OK
4162 024550  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4163                                                                         ;SOFT ERROR, DON'T CARE ABOUT WRITE
4164                                                                         ;COMMAND'S RESULTS - CHECKING WRITE
                                                                            ;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$CLP1
4167 024566  012737  000001  026512          MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
4170 024574  012737  140410  026510          MOV     #140410,T29PK3          ;SET UP COMMAND IN APCKET                       ;SET
UP SPACE REVERSE
4171 024602  012704  026510                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4172 024606  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4173 024612  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4174 024616  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4175 024622  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4176 024626  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4177 024630  001406                          BEQ     175$                    ;BR. IF OK
4200 024632  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4201 024636                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     024636  104456                                                                  TRAP    C$ERHRD
     024640  000161                                                                  .WORD   113
     024642  027632                                                                  .WORD   T29WDE
     024644  011700                                                                  .WORD   PKTSSR
4202 024646                          175$:    CKLOOP                          ;LOOP IF SELECTED
     024646  104406                                                                  TRAP    C$CLP1
4203 024650  013737  003076  026512          MOV     FREE,T29RB              ;ADDRESS OF BUFFER
4204 024656  012737  141011  026510          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMD.
4205 024664  012704  026510                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4206 024670  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4207 024674  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4210 024700  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4211 024704  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
4212 024710  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4213 024712  001406                          BEQ     180$                    ;BR. IF OK
4214 024714  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4215 024720                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
```

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        024720  104456                                                          TRAP    C$ERMRD
        024722  000162                                                          .WORD   114
        024724  027632                                                          .WORD   T29WDE
        024726  011700                                                          .WORD   PKTSSR
4196    024730                          180$:   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$ERMRD
        024756  000163                                                          .WORD   115
        024760  031716                                                          .WORD   T29RIB
        024762  016350                                                          .WORD   EXPREC
4207    024764                          190$:
4208    024764                                  ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
        024764                                                                  L10040:
        024764  104403                                                          TRAP    C$ESUB
```

```
4210                                    ;*
4211                                    ;
4212                                    ;TEST 1, SUBTEST 3
4213                                    ;
4214                                    ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND TERMINATES
4215                                    ;PROPERLY AND WRITES THE TAPE MARK ONTO TAPE (BY ISSUING A READ REVERSE
4216                                    ;COMMAND AND CHECKING FOR TAPE STATUS ALERT TERMINATION AND TMK=1).
4217                                    ;
4218                                    ;-
4219 024766                                     BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     024766                                                                                     T1.3:
     024766  104402                                                                             TRAP    C$BSUB
4220 024770  004737  032140                     JSR     PC,T29REST              ;SET COMMAND PACKET
4221 024774  004737  032232                     JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
4222 025000  004737  032274                     JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
4223 025004  012737  023420  026550             MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
4224 025012  004737  016650               10$:  JSR     PC,$OFINIT              ;DO INITIALIZE ON CONTROLLER
4225 025016  103426                             BCS     20$                     ;BR IF INIT WAS OK
4226 025020                                     DELAY   250                     ;DELAY ABOUT .25 SECONDS
     025020  012727  000250                                                             MOV     #250.,(PC)+
     025024  000000                                                                     .WORD   0
     025026  013727  002116                                                             MOV     L$DLY,(PC)+
     025032  000000                                                                     .WORD   0
     025034  005367  177772                                                             DEC     -6(PC)
     025040  001375                                                                     BNE     .-4
     025042  005367  177756                                                             DEC     -22(PC)
     025046  001367                                                                     BNE     .-20
4227 025050  005337  026550                     DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
4228 025054  001356                             BNE     10$                     ;BR. IF MORE DELAY TIME LEFT
4229 025056  004737  020106                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4233 025062  010001                             MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4234 025064                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     025064  104455                                                                     TRAP    C$ERDF
     025066  000164                                                                     .WORD   116
     025070  003554                                                                     .WORD   SFIERR
     025072  011666                                                                     .WORD   SFIMSG
4235 025074                               20$:
4236 025074  012704  026360                       MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4237 025100  004737  010332                       JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4238 025104  103407                               BCS     23$                     ;BR. IF COMMAND ISSUED OK
4239 025106  004737  020106                       JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4243 025112  010001                               MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4244 025114                                       ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     025114  104456                                                                     TRAP    C$ERHRD
     025116  000165                                                                     .WORD   117
     025120  004760                                                                     .WORD   WRTMSG
     025122  011666                                                                     .WORD   SFIMSG
4245 025124                               23$:    CKLOOP                          ;LOOP IF SELECTED
     025124  104406                                                                     TRAP    C$CLP1
4246 025126  004737  010434                       JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4247 025132  103411                               BCS     30$                     ;BR. IF NO PROBLEM
4248 025134  016501  000000                       MOV     TSSR(R5),R1             ;GET TSSR
4249 025140  010004                               MOV     R0,R4                   ;SAVE PACKET ADDRESS
4250 025142  004737  020106                       JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4254 025146                                       ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
     025146  104456                                                                     TRAP    C$ERHRD
     025150  000166                                                                     .WORD   118
```

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                                                                                .WORD   T29RWN
                                                                                .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
```

TEST 1: WRITE TAPE MARK RETRY

```
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.
                                        ;
                                        ;-
4335 025470                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     025470                                                                     T1.4:
     025470  104402                                                            TRAP    C$BSUB
4336 025472  004737  032140             JSR     PC,T29REST              ;SET COMMAND PACKET
4337 025476  004737  032232             JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
4338 025502  004737  032274             JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
4339 025506  012737  023420  026550     MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
4340 025514  004737  016650     10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4341 025520  103426                     BCS     20$                     ;BR IF INIT WAS OK
4342 025522                             DELAY   250                     ;DELAY ABOUT .25 SECONDS
     025522  012727  000250                                                      MOV     #250,(PC)+
     025526  000000                                                              .WORD   0
     025530  013727  002116                                                      MOV     L$DLY,(PC)+
     025534  000000                                                              .WORD   0
     025536  005367  177772                                                      DEC     -6(PC)
     025542  001375                                                              BNE     .-4
     025544  005367  177756                                                      DEC     -22(PC)
     025550  001367                                                              BNE     .-20
4343 025552  005337  026550             DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
4344 025556  001356                     BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
4345 025560  004737  020106             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4349 025564  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4350 025566                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     025566  104455                                                            TRAP    C$ERDF
     025570  000174                                                            .WORD   124
     025572  003554                                                            .WORD   SFIERR
     025574  011666                                                            .WORD   SFIMSG
4351 025576                     20$:
4352 025576  012704  026360             MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4353 025602  004737  010332             JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4354 025606  103407                     BCS     23$                     ;BR, IF COMMAND ISSUED OK
4355 025610  004737  020106             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4359 025614  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4360 025616                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     025616  104456                                                            TRAP    C$ERHRD
     025620  000175                                                            .WORD   125
     025622  004760                                                            .WORD   WRTMSG
     025624  011666                                                            .WORD   SFIMSG
4361 025626                     23$:    CKLOOP                          ;LOOP IF SELECTED
     025626  104406                                                            TRAP    C$CLP1
4362 025630  004737  010434             JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4363 025634  103411                     BCS     30$                     ;BR, IF NO PROBLEM
4364 025636  016501  000000             MOV     TSSR(R5),R1             ;GET TSSR
4365 025642  010004                     MOV     R0,R4                   ;SAVE PACKET ADDRESS
4366 025644  004737  020106             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4370 025650                             ERRHRD  ERRNO,T29RWN,PKTSSR     ;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
```

```
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
```

```
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
                                ;-
                                        .BLKB   10-<.-TUV2A&7>
026352                          T29PACKET:                      ;COMMAND PACKET FOR TEST
026360                                  .WORD   14004           ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
026360  014004                          .WORD   T29DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
026362  026370                          .WORD   0
026364  000000                          .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
026366  000012                  T29DATA:                        ;CHARACTERISTICS DATA BLOCK
026370                                  .WORD   T29BFR          ;ADDRESS OF MESSAGE BUFFER
026370  026400                          .WORD   0
026372  000000                          .WORD   20.             ;LENGTH OF MESSAGE BUFFER
026374  000024                          .WORD   0
026376  000000                  T29BFR: .BLKW   25.             ;MESSAGE BUFFER
026400                          ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
                                        .BLKB   10-<.-TUV2A&7>
026462                          T29PK2:
026470                                  .WORD   100006          ;WRITE SUB SYS MEM COMMAND, AND ACK
026470  100006                          .WORD   T29BF2          ;ADDRESS OF SELECT BLOCK DATA
026472  026520                          .WORD   0
026474  000000                          .WORD   6.              ;SIZE OF DATA PACKET
026476  000006                          .BLKB   10-<.-TUV2A&7>
026500                          T29PK3:
026510                                  .WORD   140005          ;WRITE TAPE MARK RETRY COMMAND, CVC=1 AND ACK
026510  140005                  T29RB:
026512                          T29WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
026512  003076                          .WORD   0
026514  000000                  T29SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
026516  000000                          .EVEN
026520                          ;
                                T29BF2:
026520                          T29BS0: .BYTE   10              ;BSEL0 AREA
026520      010                 T29BS1: .BYTE   200             ;BSEL1 AREA
026521      200                 T29S2:  .WORD   0               ;SEL 2 AREA
026522  000000                  T29S3:  .WORD   0               ;DATA AREA
026524  000000                          .EVEN
026526                          ;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                          ;
026544  000000                  T29CNT: .WORD   0               ;TAPE RECORD COUNTER STORAGE AREA
026546                          T29RSZ: .WORD   0               ;RECORD STORAGE SIZE  AREA
026546  000000                  T29DLY: .WORD                   ;DELAY COUNTER STORAGE AREA
026550  000000
```

```
                                        ;+
                                        ;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 (XST0)'
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 XST0'
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 Ram'
030412  124  123  123  T29AM3: .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 XST0'
031217  122  145  141  T29LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
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 (XST0) 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
```

```
4588 032166  012721  026400                MOV     #T29BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
4589 032172  005021                        CLR     (R1)+
4590 032174  012721  000024                MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
4591 032200  005021                        CLR     (R1)+
4592 032202  012711  000000                MOV     #0,(R1)                 ;SELECT DRIVE ZERO (0)
4593 032206  012702  000030                MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
4594 032212  012762  177777  026400  64$:  MOV     #177777,T29BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
4595 032220  005742                        TST     -(R2)                   ;NEXT LOCATION
4596 032222  020227  000000                CMP     R2,#0                   ;CHECK FOR END OF LOOP
4597 032226  001371                        BNE     64$                     ;KEEP GOING UNTIL DONE
4598 032230  000207                        RTS     PC                      ;RETURN
4599
4600
4601 032232                        T29RT2:
4602 032232                                SAVREG                          ;SAVE THE REGISTERS
4603 032236  012701  026470                MOV     #T29PK2,R1              ;START OF THE PACKET
4604 032242  012721  140006                MOV     #140006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1,
4605 032246  012721  026520                MOV     #T29BF2,(R1)+           ;ADDRESS OF DATA BLOCK
4606 032252  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
4607 032254  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
4608 032260  005021                        CLR     (R1)+
4609 032262  012701  026520                MOV     #T29BF2,R1              ;POINT TO DATA SEL AREA
4610 032266  005021                        CLR     (R1)+
4611 032270  005011                        CLR     (R1)
4612 032272  000207                        RTS     PC                      ;RETURN
4613 032274                        T29RT3:
4614 032274                                SAVREG                          ;SAVE THE REGISTERS
4615 032300  012701  026510                MOV     #T29PK3,R1              ;START OF THE PACKET
4616 032304  012721  000000                MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK,
4617 032310  012721  000000                MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
4618 032314  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
4619 032316  012711  000000                MOV     #0,(R1)         ;SIZE OF DATA BLOCK IN BYTES
4620 032322  000207                        RTS     PC                      ;RETURN
4621 032324                                ENDTST
032324
032324  104401                    L10036:
                                           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.
                                ;
                                ;
                                ;-

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

```
4682 032364  004737  041142                JSR     PC,T30REST              ;SET COMMAND PACKET
4683 032370  005037  036544                CLR     T30FCN                  ;CLEAR FILE COUNTER
4684 032374  004737  041234                JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
4685 032400  004737  041276                JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
4686 032404  012737  176750  036546        MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
4687 032412  004737  016650          10$:  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4688 032416  103426                BCS     20$                             ;BR IF INIT WAS OK
4689 032420                        DELAY   250                             ;DELAY ROUTINE CALL
     032420  012727  000250                                                        MOV     #250.,(PC)+
     032424  000000                                                                .WORD   0
     032426  013727  002116                                                        MOV     L$DLY,(PC)+
     032432  000000                                                                .WORD   0
     032434  005367  177772                                                        DEC     -6(PC)
     032440  001375                                                                BNE     .-4
     032442  005367  177756                                                        DEC     -22(PC)
     032446  001367                                                                BNE     .-20
4690 032450  005337  036546                DEC     T30DLY                  ;BUMP COUNTER
4691 032454  001356                BNE     10$                             ;BR, IF MORE COUNTING TO DO
4692 032456  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4696 032462  010001                MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
4697 032464                        ERROF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
     032464  104455                                                                TRAP    C$EROF
     032466  000311                                                                .WORD   201
     032470  003554                                                                .WORD   SFIERR
     032472  011666                                                                .WORD   SFIMSG
4698 032474                        20$:
4699
4700 032474  012704  036360                MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4701
4702                               ;*************************************************
4703                               ;
4704                               ;ISSUE WHITE CHARACTERISTICS COMMAND
4705                               ;
4706                               ;*************************************************
4707
4708 032500  004737  010332                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4709 032504  103407                BCS     23$                             ;BR, IF COMMAND ISSUED OK
4710 032506  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4714 032512  010001                MOV     R0,R1                           ;SAVE CONTENTS OF TSSR
4715 032514                        ERRMRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
     032514  104456                                                                TRAP    C$ERMRD
     032516  000312                                                                .WORD   202
     032520  004760                                                                .WORD   WRTMSG
     032522  011666                                                                .WORD   SFIMSG
4716 032524                        23$:    CKLOOP                          ;LOOP IF SELECTED
     032524  104406                                                                TRAP    C$CLP1
471/
4718                               ;*************************************************
4719                               ;
4720                               ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
4721                               ;
4722                               ;*************************************************
4723
4724 032526  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4725 032532  103411                BCS     30$                             ;BR, IF NO PROBLEM
4726 032534  010004                MOV     R0,R4                           ;GET PACKET ADDRESS
4727 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,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
     032546  104456                                                        TRAP    C$ERHRD
     032550  000313                                                        .WORD   203
     032552  040130                                                        .WORD   T3ORWN
     032554  011700                                                        .WORD   PKTSSR
4733 032556                        30$:    CKLOOP                          ;LOOP IF SELECTED
     032556  104406                                                        TRAP    C$CLP1
4734
4735                               ;*************************************************************
4736                               ;
4737                               ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
4738                               ;
4739                               ;*************************************************************
4740
4741 032560  013701  036406                MOV     T30BFR+6,R1             ;PICK UP XST0
4742 032564  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4743 032566  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4744 032572  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
4745 032574  001406                        BEQ     40$                     ;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,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
      033130  104456                                                          TRAP    C$ERHRD
      033132  000320                                                          .WORD   208
      033134  040130                                                          .WORD   T3ORWN
      033136  011700                                                          .WORD   PKTSSR
 4849 033140                          170$:   CKLOOP                  ;LOOP IF SELECTED
      033140  104406                                                          TRAP    C$CLP1
 4850
 4851                          ;*************************************************************
 4852                          ;
 4853                          ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
 4854                          ;
 4855                          ;*************************************************************
 4856
 4857 033142  013701  036406          MOV     T30BFR+6,R1             ;PICK UP XST0
 4858 033146  010102                  MOV     R1,R2                   ;SET UP EXPECTED
 4859 033150  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 4860 033154  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
 4861 033156  001406                  BEQ     180$                    ;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
```

```
      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$CLP1
 4916
 4917                                 ;*****************************************************************
 4918                                 ;
 4919                                 ;GET EXTENDED S ATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
 4920                                 ;
 4921                                 ;*****************************************************************
 4922
 4923 033374  013701  036406                  MOV     T30BFR+6,R1             ;PICK UP XSTO
 4924 033400  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 4925 033402  052702  100000                  BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
 4926 033406  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 4927 033410  001406                          BEQ     195$                    ;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
```

```
4979
4980                                    ;*************************************************************
4981                                    ;
4982                                    ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
4983                                    ;
4984                                    ;*************************************************************
4985
4986 033614  004737  010434                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4987 033620  103411                            BCS     230$                    ;BR, IF NO PROBLEM
4988 033622  010004                            MOV     R0,R4                   ;SAVE PACKET ADDRESS
4989 033624  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR STATUS
4990 033630  004737  020106                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4994 033634                                    ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     033634  104456                                                                    TRAP    C$ERHRD
     033636  000330                                                                    .WORD   216
     033640  040130                                                                    .WORD   T30RWN
     033642  011700                                                                    .WORD   PKTSSR
4995 033644                            230$:   CKLOOP                          ;LOOP IF SELECTED
     033644  104406                                                                    TRAP    C$CLP1
4996
4997                                    ;*************************************************************
4998                                    ;
4999                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5000                                    ;
5001                                    ;*************************************************************
5002
5003 033646  013701  036406                    MOV     T30BFR+6,R1             ;PICK UP XST0
5004 033652  010102                            MOV     R1,R2                   ;SET UP EXPECTED
5005 033654  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5006 033660  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
5007 033662  001406                            BEQ     240$                    ;BR, IF EQUAL (OK)
5008 033664  004737  020106                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5012 033670                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     033670  104456                                                                    TRAP    C$ERHRD
     033672  000331                                                                    .WORD   217
     033674  037731                                                                    .WORD   T30BOT
     033676  016350                                                                    .WORD   EXPREC
5013 033700                            240$:   CKLOOP                          ;LOOP IF SELECTED
     033700  104406                                                                    TRAP    C$CLP1
5014 033702  005723                            TST     (R3)+                   ;POINT TO NEXT POSITION
5015 033704  011301                            MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
5016 033706  020127  177777                    CMP     R1,#177777              ;END OF TABLE MARKER
5017 033712  001402                            BEQ     330$                    ;BR, IF AT END OF TABLE
5018 033714  000137  033202                    JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
5019 033720                            330$:   CKLOOP                          ;LOOP IF SELECTED
     033720  104406                                                                    TRAP    C$CLP1
5020 033722                                    ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     033722                                                                  L10044:
     033722  104403                                                                    TRAP    C$ESUB
```

```
5022                                    ;*
5023                                    ;
5024                                    ;TEST 2, SUBTEST 2
5025                                    ;
5026                                    ;VERIFIES THAT SKIP TAPE MARKS COMMANDS WITH A TAPE
5027                                    ;MARK COUNT GREATER THAN 1 OPERATE PROPERLY. COUNTS
5028                                    ;OF 2,3,8,64,256, AND 512 ARE TESTED. THE
5029                                    ;TESTING SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
5030                                    ;
5031                                    ;
5032                                    ;
5033                                    ;-
5034
5035 033724                                     BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      033724                                                                                  T2.2:
      033724  104402                                                                            TRAP    C$BSUB
5036 033726  004737  041142                     JSR     PC,T30REST              ;SET COMMAND PACKET
5037 033732  005037  036544                     CLR     T30FCN                  ;CLEAR FILE COUNTER
5038 033736  004737  041234                     JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
5039 033742  004737  041276                     JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
5040 033746  012737  176750  036546             MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
5041 033754  004737  016650              10$:   JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
5042 033760  103426                             BCS     20$                     ;BR IF INIT WAS OK
5043 033762                                     DELAY   250                     ;DELAY ROUTINE CALL
      033762  012727  000250                                                                  MOV     #250.,(PC)+
      033766  000000                                                                          .WORD   0
      033770  013727  002116                                                                  MOV     L$DLY,(PC)+
      033774  000000                                                                          .WORD   0
      033776  005367  177772                                                                  DEC     -6(PC)
      034002  001375                                                                          BNE     .-4
      034004  005367  177756                                                                  DEC     -22(PC)
      034010  001367                                                                          BNE     .-20
5044 034012  005337  036546                     DEC     T30DLY                  ;BUMP COUNTER
5045 034016  001356                             BNE     10$                     ;BR, IF MORE COUNTING TO DO
5046 034020  004737  020106                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5050 034024  010001                             MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5051 034026                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      034026  104455                                                                          TRAP    C$ERDF
      034030  000332                                                                          .WORD   218
      034032  003554                                                                          .WORD   SFIERR
      034034  011666                                                                          .WORD   SFIMSG
5052 034036                                20$:
5053
5054 034036  012704  036360                     MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5055
5056                                    ;*****************************************************************
5057                                    ;
5058                                    ;ISSUE WRITE CHARACTERISTICS COMMAND
5059                                    ;
5060                                    ;*****************************************************************
5061
5062 034042  004737  010332                     JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5063 034046  103407                             BCS     23$                     ;BR, IF COMMAND ISSUED OK
5064 034050  004737  020106                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5068 034054  010001                             MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5069 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$CLP1
 5088
 5089                         ;*************************************************************
 5090                         ;
 5091                         ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
 5092                         ;
 5093                         ;*************************************************************
 5094
 5095 034122  013701  036406          MOV     T30BFR+6,R1             ;PICK UP XST0
 5096 034126  010102                  MOV     R1,R2                   ;SET UP EXPECTED
 5097 034130  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 5098 034134  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
 5099 034136  001406                  BEQ     40$                     ;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
```

```
5119 034216  013702  036544              MOV     T30FCN,R2               ;GET FILE COUNTER
5120 034222  000302                      SWAB    R2                      ;MOVE TO UPPER BYTE
5121 034224  010301                      MOV     R3,R1                   ;GET RECORD COUNTER
5122 034226  060201                      ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
5123 034230  010177  146642              MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
5124 034234  010465  177776              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5125 034240  004737  017124              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5126 034244  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5127 034250  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
5128 034254  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
5129 034256  001406                      BEQ     70$                     ;BR, IF OK
5130 034260  004737  020106              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5134                                                                     ;SOFT ERROR, DON'T CARE ABOUT WRITE
5135                                                                     ;COMMAND'S RESULTS - CHECKING SKIP
5136                                                                     ;TAPE MARK COMMAND
5137 034264                              ERRSOFT ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     034264  104457                                                                 TRAP    C$ERSOFT
     034266  000336                                                                 .WORD   222
     034270  037060                                                                 .WORD   T30WDD
     034272  011700                                                                 .WORD   PKTSSR
5138 034274                      70$:    CKLOOP                          ;LOOP IF SELECTED
     034274  104406                                                                 TRAP    C$CLP1
5139 034276  005203                      INC     R3                      ;COUNT THE RECORD COUNTER DOWN
5140 034300  020327  000021              CMP     R3,#21                  ;AT 20 YET
5141 034304  001331                      BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
5142
5143                             ;*****************************************************
5144                             ;
5145                             ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5146                             ;
5147                             ;*****************************************************
5148
5149 034306  012737  141011  036510      MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5150 034314  012704  036510              MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5151 034320  010465  177776              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5152 034324  004737  017124              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5153 034330  016501  000000              MOV     TSSR(R5),R1             ;PICK UP TSSR
5154 034334  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
5155 034340  020102                      CMP     R1,R2                   ;WAS STATUS GOOD
5156 034342  001406                      BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
5157 034344  004737  020106              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5161 034350                              ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034350  104456                                                                 TRAP    C$ERHRD
     034352  000337                                                                 .WORD   223
     034354  040252                                                                 .WORD   T30WDC
     034356  011700                                                                 .WORD   PKTSSR
5162 034360                      160$:   CKLOOP                          ;LOOP IF SELECTED
     034360  104406                                                                 TRAP    C$CLP1
5163 034362  005237  036544              INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
5164 034366  023727  036544  000031      CMP     T30FCN,#25.             ;WRITE 25 FILES TO TAPE
5165 034374  001273                      BNE     64$                     ;BR, IF NOT AT 25 FILES WRITTEN
5166
5167                             ;*****************************************************
5168                             ;
5169                             ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5170                             ;
5171                             ;*****************************************************
```

```
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$CLP1
5204
5205                                 ;***************************************************************
5206                                 ;
5207                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5208                                 ;
5209                                 ;***************************************************************
5210
5211 034504  013701  036406                  MOV     T30BFR+6,R1             ;PICK UP XST0
5212 034510  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5213 034512  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5214 034516  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5215 034520  001406                          BEQ     180$                    ;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"
```

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5223 034546  012703  036526                MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
5224
5225 034552  011337  036376        182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
5226 034556  012704  036360                MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5227
5228                               ;*************************************************************
5229                               ;
5230                               ;ISSUE WRITE CHARACTERISTICS COMMAND
5231                               ;
5232                               ;*************************************************************
5233
5234 034562  004737  010332                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5235 034566  103407                        BCS     188$                    ;BR, IF COMMAND ISSUED OK
5236 034570  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5240 034574  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5241 034576                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     034576  104456                                                                TRAP    C$ERHRD
     034600  000343                                                                .WORD   227
     034602  004760                                                                .WORD   WRTMSG
     034604  011666                                                                .WORD   SFIMSG
5242 034606                        188$:   CKLOOP                          ;LOOP IF SELECTED
     034606  104406                                                                TRAP    C$CLP1
5243
5244                               ;*************************************************************
5245                               ;
5246                               ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
5247                               ;
5248                               ;*************************************************************
5249
5250 034610  012737  141010  036510        MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
5251 034616  013737  036544  036512        MOV     T30FCN,T30RB            ;SET UP NUMBER TO SKIP
5252 034624  012704  036510                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5253 034630  010465  177776        189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5254 034634  012737  176750  036546        MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
5255 034642  004737  017124        190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5256 034646  016501  000000                MOV     TSSR(R5),R1             ;PICK UP TSSR
5257 034652  032701  000200                BIT     #SSR,R1                 ;IS SSR SET YET
5258 034656  001017                        BNE     191$                    ;BR, IF SSR IS SET
5259 034660                                DELAY   250                     ;CALL DELAY ROUTINE
     034660  012727  000250                                                        MOV     #250.,(PC)+
     034664  000000                                                                .WORD   0
     034666  013727  002116                                                        MOV     L$DLY,(PC)+
     034672  000000                                                                .WORD   0
     034674  005367  177772                                                        DEC     -6(PC)
     034700  001375                                                                BNE     .-4
     034702  005367  177756                                                        DEC     -22(PC)
     034706  001367                                                                BNE     .-20
5260 034710  005337  036546                DEC     T30DLY                  ;BUMP DELAY ROUTINE
5261 034714  001352                        BNE     190$                    ;BR, IF MORE DELAY TO GO
5262 034716  012702  000200        191$:   MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
5263 034722  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
5264 034724  001406                        BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
5265 034726  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5269 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
```

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     034740  011700                                                                  .WORD   PKTSSR
5270 034742                          1928:   CKLOOP                          ;LOOP IF SELECTED
     034742  104406                                                                  TRAP    C$CLP1
5271
5272                                 ;*************************************************************
5273                                 ;
5274                                 ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
5275                                 ;
5276                                 ;*************************************************************
5277
5278 034744  013701  036406                  MOV     T30BFR+6,R1             ;PICK UP XSTO
5279 034750  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5280 034752  052702  100000                  BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
5281 034756  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5282 034760  001406                          BEQ     1958                    ;BR, IF EQUAL (OK)
5283 034762  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5287 034766                                  ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
     034766  104456                                                                  TRAP    C$ERHRD
     034770  000345                                                                  .WORD   229
     034772  040404                                                                  .WORD   T30TMK
     034774  016350                                                                  .WORD   EXPREC
5288 034776                          1958:   CKLOOP                          ;LOOP IF SELECTED
     034776  104406                                                                  TRAP    C$CLP1
5289 035000  012700  177777                  MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
5290 035004  004737  020400                  JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
5291 035010  013737  003076  036512          MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
5292
5293                                 ;*************************************************************
5294                                 ;
5295                                 ;READ FORWARD,ACK,CVC=1 COMMAND
5296                                 ;
5297                                 ;*************************************************************
5298
5299 035016  012737  140001  036510          MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
5300 035024  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5301 035030  012737  000024  036516          MOV     #20.,T30SZ              ;SET UP RECORD SIZE IN PACKET
5302 035036  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5303 035042  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5304 035046  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5305 035052  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
5306 035056  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5307 035060  001406                          BEQ     2008                    ;BR, IF OK
5308 035062  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5312 035066                                  ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035066  104456                                                                  TRAP    C$ERHRD
     035070  000346                                                                  .WORD   230
     035072  037303                                                                  .WORD   T30RDF
     035074  011700                                                                  .WORD   PKTSSR
5313 035076                          2008:   CKLOOP                          ;LOOP IF SELECTED
     035076  104406                                                                  TRAP    C$CLP1
5314 035100  017701  145772                  MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
5315 035104  012702  177777                  MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
5316 035110  020102                          CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
5317 035112  001006                          BNE     2208                    ;BR, IF NO DATA TRANS (GOOD)
5318 035114  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5322 035120                                  ERRHRD  ERRNO,T30DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
     035120  104456                                                                  TRAP    C$ERHRD
```

```
                                                                                    .WORD   231
                                                                                    .WORD   T30DTR
                                                                                    .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$CLP1
5354
5355                                    ;***************************************************
5356                                    ;
5357                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5358                                    ;
5359                                    ;***************************************************
5360
5361 035226  013701  036406                        MOV     T30BFR+6,R1             ;PICK UP XST0
5362 035232  010102                                MOV     R1,R2                   ;SET UP EXPECTED
5363 035234  052702  000002                        BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5364 035240  020102                                CMP     R1,R2                   ;DOES EXP = REC'D
5365 035242  001406                                BEQ     240$                    ;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$:   CKLOOP                  ;LOOP IF SELECTED
     035314  104406                                                                  TRAP    C$LLP1
5382 035316                          <<<<<<<<<<< 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.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
5399 035320                                     BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     035320                                                                                     T2.3:
     035320  104402                                                                            TRAP    C$BSUB
5400 035322  004737  041142                     JSR     PC,T30REST              ;SET COMMAND PACKET
5401 035326  005037  036544                     CLR     T30FCN                  ;CLEAR FILE COUNTER
5402 035332  004737  041234                     JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
5403 035336  004737  041276                     JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
5404 035342  012737  176750  036546             MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
5405 035350  004737  016650              10$:   JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
5406 035354  103426                             BCS     20$                     ;BR IF INIT WAS OK
5407 035356                                     DELAY   250                     ;DELAY ROUTINE CALL
     035356  012727  000250                                                                    MOV     #250,(PC)+
     035362  000000                                                                            .WORD   0
     035364  013727  002116                                                                    MOV     L$DLY,(PC)+
     035370  000000                                                                            .WORD   0
     035372  005367  177772                                                                    DEC     -6(PC)
     035376  001375                                                                            BNE     .-4
     035400  005367  177756                                                                    DEC     -22(PC)
     035404  001367                                                                            BNE     .-20
5408 035406  005337  036546                     DEC     T30DLY                  ;BUMP COUNTER
5409 035412  001356                             BNE     10$                     ;BR, IF MORE COUNTING TO DO
5410 035414  004737  020106                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5414 035420  010001                             MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5415 035422                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     035422  104455                                                                            TRAP    C$ERDF
     035424  000353                                                                            .WORD   235
     035426  003554                                                                            .WORD   SFIERR
     035430  011666                                                                            .WORD   SFIMSG
5416 035432                             20$:
5417
5418 035432  012704  036360                     MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5419
5420                                    ;*************************************************************
5421                                    ;
5422                                    ;ISSUE WRITE CHARACTERISTICS COMMAND
5423                                    ;
5424                                    ;*************************************************************
5425
5426 035436  004737  010332                     JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5427 035442  103407                             BCS     23$                     ;BR, IF COMMAND ISSUED OK
5428 035444  004737  020106                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5432 035450  010001                             MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
```

```
5433 035452                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     035452  104456                                                          TRAP    C$ERHRD
     035454  000354                                                          .WORD   236
     035456  004760                                                          .WORD   WRTMSG
     035460  011666                                                          .WORD   SFIMSG
5434 035462                    23$:  CKLOOP                          ;LOOP IF SELECTED
     035462  104406                                                          TRAP    C$CLP1
5435
5436                           ;*************************************************************
5437                           ;
5438                           ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5439                           ;
5440                           ;*************************************************************
5441
5442 035464  004737  010434          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5443 035470  103411                  BCS     30$                     ;BR, IF NO PROBLEM
5444 035472  010004                  MOV     R0,R4                   ;GET PACKET ADDRESS
5445 035474  016501  000000          MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5446 035500  004737  020106          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5450 035504                          ERRHRD  ERRNO,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
     035504  104456                                                          TRAP    C$ERHRD
     035506  000355                                                          .WORD   237
     035510  040130                                                          .WORD   T3ORWN
     035512  011700                                                          .WORD   PKTSSR
5451 035514                    30$:  CKLOOP                          ;LOOP IF SELECTED
     035514  104406                                                          TRAP    C$CLP1
5452
5453                           ;*************************************************************
5454                           ;
5455                           ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5456                           ;
5457                           ;*************************************************************
5458
5459 035516  013701  036406          MOV     T308FR+6,R1             ;PICK UP XST0
5460 035522  010102                  MOV     R1,R2                   ;SET UP EXPECTED
5461 035524  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5462 035530  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
5463 035532  001406                  BEQ     40$                     ;BR, IF EQUAL (OK)
5464 035534  004737  020106          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5468 035540                          ERRHRD  ERRNO,T308OT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035540  104456                                                          TRAP    C$ERHRD
     035542  000356                                                          .WORD   238
     035544  037731                                                          .WORD   T308OT
     035546  016350                                                          .WORD   EXPREC
5469 035550                    40$:  CKLOOP                          ;LOOP IF SELECTED
     035550  104406                                                          TRAP    C$CLP1
5470 035552  012737  000001  036512          MOV     #1,T30WB                ;SET # OF TM TO SKIP
5471
5472                           ;*************************************************************
5473                           ;
5474                           ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
5475                           ;
5476                           ;*************************************************************
5477
5478 035560  012737  141410  036510          MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
5479 035566  012704  036510                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5480 035572  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

```
5481 035576  004737  017124                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5482 035602  016501  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$CLP1
5492
5493                               ;*************************************************************
5494                               ;
5495                               ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5496                               ;
5497                               ;*************************************************************
5498
5499 035634  013701  036406                MOV     T30BFR+6,R1             ;PICK UP XST0
5500 035640  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5501 035642  052702  002000                BIS     #BIT10,R2               ;SET NEF BIT IN EXPECTED
5502 035646  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5503 035650  001406                        BEQ     180$                    ;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$BSUB
035674  004737  041142                          JSR     PC,T30REST      ;SET COMMAND PACKET
035700  005037  036544                          CLR     T30FCN          ;CLEAR FILE COUNTER
035704  004737  041234                          JSR     PC,T30RT2       ;SET UP OTHER COMMAND PACKET
035710  004737  041276                          JSR     PC,T30RT3       ;SET UP OTHER COMMAND PACKET
035714  012737  176750  036546                  MOV     #65000.,T30DLY  ;SET UP DELAY COUNTER
035722  004737  016650                  10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
035726  103426                          10$     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$DLY,(PC)+
035742  000000                                                                          .WORD   0
035744  005367  177772                                                                  DEC     -6(PC)
035750  001375                                                                          BNE     .-4
035752  005367  177756                                                                  DEC     -22(PC)
035756  001367                                                                          BNE     .-20
035760  005337  036546                          DEC     T30DLY          ;BUMP COUNTER
035764  001356                                  BNE     10$             ;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     #T30PACKET,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
```

```
5561 036022  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5562 036024                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     036024  104456                                                                TRAP    C$ERHRD
     036026  000362                                                                .WORD   242
     036030  004760                                                                .WORD   WRTMSG
     036032  011666                                                                .WORD   SFIMSG
5563 036034                         23$:    CKLOOP                          ;LOOP IF SELECTED
     036034  104406                                                                TRAP    C$CLP1
5564
5565                                ;*****************************************************************
5566                                ;
5567                                ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5568                                ;
5569                                ;*****************************************************************
5570
5571 036036  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5572 036042  103411                        BCS     30$                     ;BR. IF NO PROBLEM
5573 036044  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
5574 036046  016501  000000                MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5575 036052  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5579 036056                                 ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     036056  104456                                                                TRAP    C$ERHRD
     036060  000363                                                                .WORD   243
     036062  040130                                                                .WORD   T30RWN
     036064  011700                                                                .WORD   PKTSSR
5580 036066                         30$:    CKLOOP                          ;LOOP IF SELECTED
     036066  104406                                                                TRAP    C$CLP1
5581
5582                                ;*****************************************************************
5583                                ;
5584                                ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5585                                ;
5586                                ;*****************************************************************
5587
5588 036070  013701  036406                MOV     T30BFR+6,R1             ;PICK UP XST0
5589 036074  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5590 036076  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5591 036102  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5592 036104  001406                        BEQ     40$                     ;BR. IF EQUAL (OK)
5593 036106  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5597 036112                                 ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     036112  104456                                                                TRAP    C$ERHRD
     036114  000364                                                                .WORD   244
     036116  037731                                                                .WORD   T30BOT
     036120  016350                                                                .WORD   EXPREC
5598 036122                         40$:    CKLOOP                          ;LOOP IF SELECTED
     036122  104406                                                                TRAP    C$CLP1
5599 036124  013737  003076  036512        MOV     FREE,T30WB              ;SET UP GOOD WRITE BUFFER
5600 036132  012737  000400  036516        MOV     #256.,T30SZ             ;SET UP SIZE
5601
5602                                ;*****************************************************************
5603                                ;
5604                                ;WRITE DATA,ACK,CVC=1 COMMAND
5605                                ;
5606                                ;*****************************************************************
5607
5608 036140  012737  140005  036510        MOV     #140005,T30PKT          ;WRITE DATA,ACK,CVC=1 COMMAND
```

```
5609 036146  012704  036510            MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5610 036152  010465  177776            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5611 036156  004737  017124            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5612 036162  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5613 036166  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED
5614 036172  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
5615 036174  001406                    BEQ     70$                     ;BR. IF OK
5616 036176  004737  020106            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5620                                                                   ;SOFT ERROR, DON'T CARE ABOUT WRITE
5621                                                                   ;COMMAND'S RESULTS - CHECKING SKIP
5622                                                                   ;TAPE MARK COMMAND
5623 036202                            ERRSOFT ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     036202  104457                                                                TRAP    C$ERSOFT
     036204  000365                                                                .WORD   245
     036206  037060                                                                .WORD   T30WDD
     036210  011700                                                                .WORD   PKTSSR
5624 036212                    70$:    CKLOOP                          ;LOOP IF SELECTED
     036212  104406                                                                TRAP    C$CLP1
5625
5626                           ;*****************************************************************
5627                           ;
5628                           ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
5629                           ;
5630                           ;*****************************************************************
5631
5632 036214  012737  000001  036512        MOV     #1,T30WB                ;# OF TM TO SKIP
5633 036222  012737  141410  036510        MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
5634 036230  012704  036510                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5635 036234  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5636 036240  004737  017124                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5637 036244  016501  000000                MOV     TSSR(R5),R1             ;PICK UP TSSR
5638 036250  012702  100204                MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED (SSR AND SC ONLY)
5639 036254  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
5640 036256  001406                        BEQ     160$                    ;BR. IF TERMINATION WAS GOOD
5641 036260  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5645 036264                            ERRHRD  ERRNO,T30IBU,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     036264  104456                                                                TRAP    C$ERHRD
     036266  000366                                                                .WORD   246
     036270  036550                                                                .WORD   T30IBU
     036272  011700                                                                .WORD   PKTSSR
5646 036274                    160$:   CKLOOP                          ;LOOP IF SELECTED
     036274  104406                                                                TRAP    C$CLP1
5647
5648                           ;*****************************************************************
5649                           ;
5650                           ;GET EXTENDED STATUS REGISTER ZERO (XST3) FROM MESSAGE BUFFER
5651                           ;
5652                           ;*****************************************************************
5653
5654 036276  013701  036414        MOV     T30BFR+14,R1            ;PICK UP XST3
5655 036302  010102                MOV     R1,R2                   ;SET UP EXPECTED
5656 036304  052702  000001        BIS     #BIT0,R2                ;SET RIB BIT IN EXPECTED
5657 036310  020102                CMP     R1,R2                   ;DOES EXP = REC'D
5658 036312  001406                BEQ     170$                    ;BR. IF EQUAL (OK)
5659 036314  004737  020106        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5663 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 COMMA D,  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  T30LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
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  T30OFL: .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
```

```
5791 041224  022702  000000                  CMP     #0.,R2                  ;CHECK R2 FOR DONE
5792 041230  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
5793 041232  000207                          RTS     PC                      ;RETURN
5794
5795
5796 041234                          T30RT2:
5797 041234                                  SAVREG                          ;SAVE THE REGISTERS
5798 041240  012701  036470                  MOV     #T30PK2,R1              ;START OF THE PACKET
5799 041244  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
5800 041250  012721  036520                  MOV     #T30BF2,(R1)+           ;ADDRESS OF DATA BLOCK
5801 041254  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
5802 041256  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
5803 041262  005021                          CLR     (R1)+
5804 041264  012701  036520                  MOV     #T30BF2,R1              ;POINT TO DATA SEL AREA
5805 041270  005021                          CLR     (R1)+
5806 041272  005011                          CLR     (R1)
5807 041274  000207                          RTS     PC                      ;RETURN
5808 041276                          T30RT3:
5809 041276                                  SAVREG                          ;SAVE REGISTERS
5810 041302  012701  036510                  MOV     #T30PK3,R1              ;SET UP POINTER ADDRESS
5811 041306  005021                          CLR     (R1)+                   ;COMMAND SPACE
5812 041310  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
5813 041312  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
5814 041314  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
5815 041316  000207                          RTS     PC                      ;RETURN
5816 041320                                  ENDTST
     041320                                                      L10043:
     041320  104401                                                  TRAP    C$ETST
```

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

```
                                        .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
                                ;
                                ;-
                                T31LOOP:
041362
```

```
5847                                    ;*
5848                                    ;
5849                                    ;TEST 3, SUBTEST 1
5850                                    ;
5851                                    ;       VERIFIES THAT THE NO-OP COMMAND (CORRESPONDS TO THE CLEAN TAPE
5852                                    ;       COMMAND) TERMINATES PROPERLY (NORMAL TERMINATION), STORES PROPER
5853                                    ;       STATUS IN THE MESSAGE BUFFER (LIKE THE GET STATUS COMMAND), AND
5854                                    ;       INDEED DOES NOT MOVE TAPE.  THE TAPE IS FIRST REWOUND AND
5855                                    ;       WRITTEN WITH SEQUENCED TEST RECORDS.  IT IS THEN REWOUND AGAIN
5856                                    ;       AND THE NO-OP COMMAND IS ISSUED.  IT IS VERIFIED THAT THE TAPE
5857                                    ;       IS STILL AT BOT AND THAT PROPER STATUS IS STORED.  THE FIRST
5858                                    ;       RECORD ON TAPE IS READ AND VERIFIED (TO CHECK TAPE POSITION AND
5859                                    ;       VERIFY THAT DATA WAS NOT CHANGED), THEN THE NO-OP COMMAND IS
5860                                    ;       ISSUED AGAIN AND STATUS AND POSITION VERIFIED.
5861                                    ;
5862                                    ;
5863                                    ;
5864                                    ;
5865                                    ;
5866                                    ;
5867                                    ;-
5868 041362                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      041362                                                                                    T3.1:
      041362  104402                                                                              TRAP    C$BSUB
5869 041364  004737  046460                    JSR     PC,T31REST              ;SET COMMAND PACKET
5870 041370  004737  046552                    JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
5871 041374  004737  046614                    JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
5872 041400  012737  176750  043212            MOV     #65000.,T31DLY          ;SET UP DELAY COUNTER
5873 041406  004737  016650              10$:  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
5874 041412  103426                          BCS     20$                     ;BR IF INIT WAS OK
5875 041414                                   DELAY   250                     ;DELAY ABOUT .25 SEC
      041414  012727  000250                                                                   MOV     #250.,(PC)+
      041420  000000                                                                           .WORD   0
      041422  013727  002116                                                                   MOV     L$DLY,(PC)+
      041426  000000                                                                           .WORD   0
      041430  005367  177772                                                                   DEC     -6(PC)
      041434  001375                                                                           BNE     .-4
      041436  005367  177756                                                                   DEC     -22(PC)
      041442  001367                                                                           BNE     . 20
5876 041444  005337  043212                    DEC     T31DLY                  ;BUMP COUNTER
5877 041450  001356                          BNE     10$                     ;BR, IF COUNTER NOT DONE
5878 041452  004737  020106                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5882 041456  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5883 041460                                   ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      041460  104455                                                                           TRAP    C$ERDF
      041462  000455                                                                           .WORD   301
      041464  003554                                                                           .WORD   SFIERR
      041466  011666                                                                           .WORD   SFIMSG
5884 041470                              20$:
5885 041470  012704  043030                    MOV     #T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5886 041474  004737  010332                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5887 041500  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
5888 041502  004737  020106                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5892 041506  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5893 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
```

```
 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
```

```
                                        ;*
                                        ;
                                        ;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)
```

```
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
```

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

```
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 >>>>>>>>>>>>
```

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

```
                 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-.
```

```
6166                                    ;+
6167                                    ;LOCAL STORAGE FOR THIS TEST
6168                                    ;-
6170 043024                                     .BLKB   10-<.-TUV2A&7>
6172 043030                             T31PACKET:                      ;COMMAND PACKET FOR TEST
6173 043030  100004                             .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
6174 043032  043040                             .WORD   T31DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
6175 043034  000000                             .WORD   0
6176 043036  000012                             .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
6177 043040                             T31DATA:                        ;CHARACTERISTICS DATA BLOCK
6178 043040  043050                             .WORD   T31BFR          ;ADDRESS OF MESSAGE BUFFER
6179 043042  000000                             .WORD   0
6180 043044  000024                             .WORD   20.             ;LENGTH OF MESSAGE BUFFER
6181 043046  000000                             .WORD   0
6182 043050                             T31BFR: .BLKW   25.             ;MESSAGE BUFFER
6183                                    ;
6184                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
6185                                    ;
6187 043132                                     .BLKB   10-<.-TUV2A&7>
6189 043140                             T31PK2:
6190 043140  100006                             .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
6191 043142  043170                             .WORD   T31BF2          ;ADDRESS OF SELECT BLOCK DATA
6192 043144  000000                             .WORD   0
6193 043146  000006                             .WORD   6.              ;SIZE OF DATA PACKET
6194
6196 043150                                     .BLKB   10-<.-TUV2A&7>
6198 043160                             T31PK3:
6199 043160  100005                             .WORD   100005          ;REREAD COMMAND, AND ACK
6200 043162                             T31RB:
6201 043162  003076                     T31WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
6202 043164  000000                             .WORD   0
6203 043166  000000                     T31SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
6204                                            .EVEN
6205                                    ;
6206                                    ;
6207                                    ;
6208 043170                             T31BF2:
6209 043170     010                     T31BS0: .BYTE   10              ;BSEL0 AREA
6210 043171     200                     T31BS1: .BYTE   200             ;BSEL1 AREA
6211 043172  000000                     T31S2:  .WORD   0               ;SEL 2 AREA
6212 043174  000000                     T31S3:  .WORD   0               ;DATA AREA
6213                                    ;
6214                                    ;
6215                                            .EVEN
6216                                    ;TAPE MOTION PACKET COMMAND VALUES
6217
6218 043176  100205                     T31RN:  .WORD   100205          ;REREAD DATA (NEXT)
6219 043200  100605                     T31WDR: .WORD   100605          ;REREAD DATA RETRY
6220 043202  102205                     T31CON: .WORD   102205          ;WRITE CONTINOUS
6221 043204  177777                             .WORD   177777          ;END OF DATA
6222
6223                                    ;
6224 043206  000000                     T31CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
6225 043210  000000                     T31CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
6226 043212  000000                     T31DLY: .WORD   0               ;DELAY COUNTER
6227
```

```
                                        ;+
                                        ;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'
045711      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
```

```
6286 046512  005021                          CLR     (R1)+
6287 046514  012721  000024                  MOV     #20.,(R1)+          ;LENGTH OF MESSAGE BUFFER
6288 046520  005021                          CLR     (R1)+
6289 046522  012711  000000                  MOV     #0,(R1)             ;SELECT DRIVE ZERO
6290 046526  012702  000030                  MOV     #24.,R2             ;NUMBER OF LOCATIONS TO BE CLEARED
6291 046532  012762  177777  043050  64$:    MOV     #177777,T31BFR(R2)  ;ALL ONES TO MESSAGE BUFFER
6292 046540  005742                          TST     -(R2)               ;NEXT LOCATION
6293 046542  022702  000000                  CMP     #0,R2               ;AT END OF LOOP YET
6294 046546  001371                          BNE     64$                 ;KEEP GOING UNTIL DONE
6295 046550  000207                          RTS     PC                  ;RETURN
6296
6297
6298 046552                          T31RT2:
6299 046552                                  SAVREG                      ;SAVE THE REGISTERS
6300 046556  012701  043140                  MOV     #T31PK2,R1          ;START OF THE PACKET
6301 046562  012721  100006                  MOV     #100006,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK.
6302 046566  012721  043170                  MOV     #T31BF2,(R1)+       ;ADDRESS OF DATA BLOCK
6303 046572  005021                          CLR     (R1)+               ;EXTENDED ADDRESS
6304 046574  012721  000006                  MOV     #6.,(R1)+           ;SIZE OF DATA BLOCK IN BYTES
6305 046600  005021                          CLR     (R1)+
6306 046602  012701  043170                  MOV     #T31BF2,R1          ;POINT TO DATA SEL AREA
6307 046606  005021                          CLR     (R1)+
6308 046610  005011                          CLR     (R1)
6309 046612  000207                          RTS     PC                  ;RETURN
6310 046614                          T31RT3:
6311 046614                                  SAVREG                      ;SAVE REGISTERS
6312 046620  012701  043160                  MOV     #T31PK3,R1          ;SET UP POINTER ADDRESS
6313 046624  005021                          CLR     (R1)+               ;COMMAND SPACE
6314 046626  005021                          CLR     (R1)+               ;ADDRESS OF DATA BLOCK
6315 046630  005021                          CLR     (R1)+               ;EXTENDED ADDRESS
6316 046632  005011                          CLR     (R1)                ;SIZE OF DATA TRANSFER BLOCK
6317 046634  000207                          RTS     PC                  ;RETURN
6318 046636                                  ENDTST
046636
046636  104401                      L10050:
                                            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
                                ;
                                ;
                                ;
                                ;-
                                        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    C$PNTX
```

```
TEST  4: ERASE AND OPERATION INCOMPLETE

      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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                                                                                .WORD   WRTMSG
                                                                                .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,TSDB(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$CLP1
6519 047514  013701  051204                MOV     T32BFR+14,R1            ;GET XST3 STATUS WORD
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6520 047520  010102                        MOV     R1,R2                   ;SET UP EXPECTED
6521 047522  052702  000001                BIS     #BIT0,R2                ;SET THE RIB BIT
6522 047526  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6523 047530  001406                        BEQ     190$                    ;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
```

```
6532                    ;*
6533                    ;
6534                    ;TEST 4, SUBTEST 2
6535                    ;
6536                    ;       VERIFIES THAT AN ERASE COMMAND EXECUTED WHEN THE TAPE IS NOT
6537                    ;       POSITIONED AT BOT OPERATES PROPERLY AND DOES NOT CORRUPT
6538                    ;       PREVIOUS TAPE RECORDS.  THE TEST SEQUENCE IS:
6539                    ;
6540                    ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
6541                    ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
6542                    ;
6543                    ;
6544                    ;            2.  A SPACE RECORDS FORWARD COMMAND IS ISSUED TO MOVE THE
6545                    ;                TAPE OFF OF BOT AND SKIP OVER THE FIRST SEVERAL
6546                    ;                RECORDS.
6547                    ;
6548                    ;            3.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
6549                    ;                OF THE TEST RECORDS.
6550                    ;
6551                    ;            4.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED.
6552                    ;
6553                    ;            5.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
6554                    ;                NORMAL TERMINATION IS ACCOMPLISHED AND THAT THE DATA
6555                    ;                TRANSFERRED CORRESPONDS TO THAT FOR THE EXPECTED
6556                    ;                RECORD.  THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED
6557                    ;                IN THE AREA ERASED L  THE ERASE COMMAND, AND THAT THE
6558                    ;                PREVIOUS RECORD WAS NOT CORRUPTED.
6559                    ;
6560                    ;
6561                    ;
6562                    ;
6563                    ;
6564                    ;
6565                    ;-
6566 047550                        BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      047550                                                                          T4.2:
      047550  104402                                                                    TRAP    C$BSUB
6567 047552  004737  052632        JSR     PC,T32REST              ;SET COMMAND PACKET
6568 047556  004737  052724        JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
6569 047562  004737  052754        JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
6570 047566  004737  016650        JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
6571 047572  103407                BCS     20$                     ;BR IF INIT WAS OK
6572 047574  004737  020106        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6576 047600  010001                MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
6577 047602                        ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      047602  104455                                                                    TRAP    C$ERDF
      047604  000633                                                                    .WORD   411
      047606  003554                                                                    .WORD   SFIERR
      047610  011666                                                                    .WORD   SFIMSG
6578 047612                    20$:
6579 047612  012704  051150        MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
6580 047616  004737  010332        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
6581 047622  103407                BCS     23$                     ;BR, IF COMMAND ISSUED OK
6582 047624  004737  020106        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6586 047630  010001                MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
6587 047632                        ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      047632  104456                                                                    TRAP    C$ERHRD
```

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                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$CLP1
6645 050072  013701  051176                MOV     T328FR+6,R1             ;PICK UP XSTO
6646 050076  010102                        MOV     R1,R2                   ;SET UP EXPECTED
6647 050100  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6648 050104  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
6649 050106  001406                        BEQ     240$                    ;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
                                ;       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.  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$ERDF
050436  000645                                                                          .WORD   421
050440  003554                                                                          .WORD   SFIERR
050442  011666                                                                          .WORD   SFIMSG
050444                          20$:
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
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
```

```
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$CLP1
6822 051024  013701  051204                MOV     T32BFR+14,R1            ;PICK UP XST3
6823 051030  010102                        MOV     R1,R2                   ;SET UP EXPECTED
6824 051032  052702  000100                BIS     #BIT6,R2                ;SET OPI BIT IN EXPECTED
6825 051036  020102                        CMP     R1,P2                   ;IS OPI BIT SET
6826 051040  001406                        BEQ     290$                    ;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
```

```
 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  0C0006                                  .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 XST0)'
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  T32AM3: .ASCIZ  'TSSR Unit, 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 (XST0) 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  '%NBA 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  T32RT2:
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
```

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CZTKMA TK-25 FRT END FUNC #4    MACRO M1200  20 APR 84 08:13  PAGE 108 1                                SEQ 184
TEST  4: ERASE AND OPERATION INCOMPLETE

 6976 052750  005021                          CLR     (R1)+
 6977 052752  000207                          RTS     PC                      ;RETURN
 6978 052754                          T32RT3:
 6979 052754                                  SAVREG                          ;SAVE REGISTERS
 6980 052760  012701  051300                  MOV     #T32PK3,R1              ;SET UP POINTER ADDRESS
 6981 052764  005021                          CLR     (R1)+                   ;COMMAND SPACE
 6982 052766  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 6983 052770  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 6984 052772  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 6985 052774  000207                          RTS     PC                      ;RETURN
 6986 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     #T$T34ID,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 ISSUED, 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
```

```
7134 053076  004737  016650          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
7135 053102  103433                  BCS     20$                     ;BR IF INIT WAS OK
7136 053104                          DELAY   250                     ;DELAY A WHILE
     053104  012727  000250                                                  MOV     #250,(PC)+
     053110  000000                                                          .WORD   0
     053112  013727  002116                                                  MOV     L$DLY,(PC)+
     053116  000000                                                          .WORD   0
     053120  005367  177772                                                  DEC     -6(PC)
     053124  001375                                                          BNE     .-4
     053126  005367  177756                                                  DEC      22(PC)
     053132  001367                                                          BNE     .-20
7137 053134  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
7138 053140  032701  000200                  BIT     #SSR,R1                 ;CHECK FOR SSR SET
7139 053144  001012                          BNE     20$                     ;BR, WHEN SSR IS SET
7140 053146  005337  055564                  DEC     T34DLY                  ;BUMP COUNTER DOWN
7141 053152  001351                          BNE     10$                     ;BR, IF MORE DELAY REQUIRED
7142 053154  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7146 053160  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
7147 053162                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     053162  104455                                                          TRAP    C$ERDF
     053164  000765                                                          .WORD   501
     053166  003554                                                          .WORD   SFIERR
     053170  011666                                                          .WORD   SFIMSG
7148 053172                          20$:    CKLOOP                          ;LOOP IF SELECTED
     053172  104406                                                          TRAP    C$CLP1
7149
7150
7151                                 ;
7152                                 ;**************************************************************************
7153                                 ;
7154                                 ;       ISSUE A WRITE CHARACTERISTICS COMMAND TO CONTROLLER
7155                                 ;
7156                                 ;**************************************************************************
7157                                 ;
7158 053174  012704  055420                  MOV     #T34PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
7159 053200  004737  010332                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
7160 053204  103407                          BCS     30$                     ;BR, IF COMMAND ISSUED OK
7161 053206  004737  020106                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7165 053212  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
7166 053214                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     053214  104456                                                          TRAP    C$ERHRD
     053216  000766                                                          .WORD   502
     053220  004760                                                          .WORD   WRTMSG
     053222  011666                                                          .WORD   SFIMSG
7167 053224                          30$:    CKLOOP                          ;LOOP IF SELECTED
     053224  104406                                                          TRAP    C$CLP1
7168                                 ;
7169                                 ;**************************************************************************
7170                                 ;
7171                                 ;       ISSUE A REWIND COMMAND
7172                                 ;
7173                                 ;**************************************************************************
7174                                 ;
7175 053226  004737  010434                  JSR     PC,REWIND               ;REWIND CALL
7176 053232  103411                          BCS     35$                     ;BR, IF TSSR IS OK (GOOD)
7177 053234  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
7178 053240  010004                          MOV     R0,R4                   ;SET UP PACKET
```

```
7179 053242  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7183 053246                                ERRHRD  ERRNO,T34RWN,PKTSSR     ;TSSR IS INCORRECT AFTER REWIND
     053246  104456                                                                TRAP    C$ERHRD
     053250  000767                                                                .WORD   503
     053252  057246                                                                .WORD   T34RWN
     053254  011700                                                                .WORD   PKTSSR
7184 053256                         35$:    CKLOOP                          ;LOOP IF SELECTED
     053256  104406                                                                TRAP    C$CLP1
7185                                ;
7186                                ;*************************************************************************
7187                                ;
7188                                ;       ISSUE A WRITE COMMAND, CHECK FOR ERRORS, THIS IS SO THAT THE
7189                                ;       DRIVE WILL NOT JUST HANG IF AN ERROR OCCURS.
7190                                ;
7191                                ;*************************************************************************
7192                                ;
7193 053260  012737  140005  055550          MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
7194 053266  013737  003076  055552          MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
7195 053274  012737  066540  055556          MOV     #28000.,T34SZ           ;SET UP BUFFER SIZE (INC # OF BYTES)
7196 053302  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7197 053306  010465  177776          36$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7198 053312  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7199 053316  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7200 053322  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7201 053326  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7202 053330  001407                          BEQ     39$                     ;BR, IF ALL IS WELL NO PROBLEMS
7203 053332  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7207 053336                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE
     053336  104457                                                                TRAP    C$ERSOFT
     053340  000770                                                                .WORD   504
     053342  005015                                                                .WORD   WRTERR
     053344  011700                                                                .WORD   PKTSSR
7208 053346  000757                          BR      36$                     ;BR, TO DO MORE CONTROLLED WRITES
7209 053350                         39$:    CKLOOP                          ;LOOP ON ERROR IF SELECTED
     053350  104406                                                                TRAP    C$CLP1
7210
7211
7212                                ;
7213                                ;*************************************************************************
7214                                ;
7215                                ;       ISSUE A WRITE COMMAND, KEEP GOING UNTIL TAPE STATUS ALERT
7216                                ;
7217                                ;*************************************************************************
7218                                ;
7219 053352  012737  140005  055550          MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
7220 053360  012703  176750                  MOV     #65000.,R3              ;SET MAX NUMBER OF WRITES
7221 053364  013737  003076  055552          MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
7222 053372  012737  066540  055556          MOV     #28000.,T34SZ           ;SET UP BUFFER SIZE (INC # OF BYTES)
7223 053400  012704  055550                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7224 053404  010465  177776          40$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7225 053410  004737  017124                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7226 053414  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7227 053420  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7228 053424  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7229 053426  001010                          BNE     50$                     ;BR, IT MIGHT BE END OF TAPE
7230 053430  005303                          DEC     R3                      ;DEC RECORD COUNTER
7231 053432  001364                          BNE     40$                     ;BR, IF MORE TO GO
```

```
7232 053434  004737  020106              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7236 053440                              ERRDF   ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
     053440  104455                                                              TRAP    C$ERDF
     053442  000771                                                              .WORD   505
     053444  057057                                                              .WORD   T34ET
     053446  011700                                                              .WORD   PKTSSR
7237                                 ;
7238                                 ;*************************************************************************
7239                                 ;
7240                                 ;       HAVE TAPE STATUS ALERT, NOW CHECK FOR EOT. IF NEITHER KEEP GOING
7241                                 ;
7242                                 ;*************************************************************************
7243                                 ;
7244 053450                         50$:
7245 053450  022701  100210              CMP     #100210,R1              ;CHECK FOR UNCORRECTABLE ERROR
7246 053454  001003                      BNE     55$                     ;BR, IF IT WASN'T UNCORR.
7247 053456  004737  060020              JSR     PC,EWCHK                ;CHECK FOR EARLY WARNING
7248 053462  103750                      BCS     40$                     ;BR, IF EARLY WARNING FOUND
7249 053464  032701  000004        55$:  BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
7250 053470  001001                      BNE     60$                     ;BR, IF SET
7251 053472  000744                      BR      40$                     ;KEEP GOING
7252 053474  013701  055446        60$:  MOV     T34BFR+6,R1             ;PICK UP XSTO
7253 053500  010102                      MOV     R1,R2                   ;SET UP EXPECTED
7254 053502  052702  000001              BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7255 053506  020102                      CMP     R1,R2                   ;WAS THE BIT ON
7256 053510  001402                      BEQ     80$                     ;BR, IF EOT WAS FOUND
7257 053512  000137  053404              JMP     40$                     ;KEEP LOOKING
7258 053516                        80$:  CKLOOP                          ;LOOP IF SELECTED
     053516  104406                                                              TRAP    C$CLP1
7259                                 ;
7260                                 ;*************************************************************************
7261                                 ;
7262                                 ;       ISSUE ONE MORE WRITE AFTER EOT DETECTED
7263                                 ;
7264                                 ;*************************************************************************
7265                                 ;
7266 053520  012737  140005  055550        MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
7267 053526  013737  003076  055552        MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
7268 053534  012737  066540  055556        MOV     #28000.,T34SZ           ;SET UP BUFFER SIZE (INC # OF BYTES)
7269 053542  012704  055550               MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7270 053546  010465  177776               MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7271 053552  004737  017124               JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7272 053556  016501  000000               MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7273 053562  012702  100204               MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
7274 053566  020102                       CMP     R1,R2                   ;ARE THEY EQUAL
7275 053570  001406                       BEQ     90$                     ;BR, IF THEY ARE OK
7276 053572  004737  020106               JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7280 053576                               ERRHRD  ERRNO,T34ET2,PKTSSR     ;WRITE TAPE AT EOT FAILED TO SET TSA
     053576  104456                                                              TRAP    C$ERHRD
     053600  000772                                                              .WORD   506
     053602  056430                                                              .WORD   T34ET2
     053604  011700                                                              .WORD   PKTSSR
7281 053606                        90$:  CKLOOP                          ;LOOP IF SELECTED
     053606  104406                                                              TRAP    C$CLP1
7282                                 ;
7283                                 ;*************************************************************************
7284                                 ;
```

```
7285                                    ;       CHECK TO BE SURE EOT IS STILL SET, IT SHOULD BE
7286                                    ;
7287                                    ;*************************************************************************
7288                                    ;
7289 053610  013701  055446                    MOV     T34BFR+6,R1             ;PICK UP XSTO
7290 053614  010102                            MOV     R1,R2                   ;SET UP EXPECTED
7291 053616  052702  000001                    BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7292 053622  020102                            CMP     R1,R2                   ;WAS THE BIT ON
7293 053624  001406                            BEQ     100$                    ;BR. IF EOT WAS FOUND
7294 053626  004737  020106                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7298 053632                                    ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     053632  104456                                                            TRAP    C$ERHRD
     053634  000773                                                            .WORD   507
     053636  056516                                                            .WORD   T34ETN
     053640  016350                                                            .WORD   EXPREC
7299 053642                            100$:   CKLOOP                          ;LOOP IF SELECTED
     053642  104406                                                            TRAP    C$CLP1
7300                                    ;
7301                                    ;*************************************************************************
7302                                    ;
7303                                    ;       NOW ISSUE A WRITE TAPE MARK, STILL BEYOND EOT
7304                                    ;
7305                                    ;*************************************************************************
7306                                    ;
7307 053644  012737  140011  055550            MOV     #140011,T34PK3          ;WRITE TAPE MARK, ACK, CVC=1 COMMAND
7308 053652  012704  055550                    MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7309 053656  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7310 053662  004737  017124                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7311 053666  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7312 053672  012702  100204                    MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
7313 053676  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
7314 053700  001406                            BEQ     110$                    ;BR. IF STATUS IS GOOD (OK)
7315 053702  004737  020106                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7319 053706                                    ERRHRD  ERRNO,T34WTM,PKTSSR     ;WRITE TAPE MARK FAILED
     053706  104456                                                            TRAP    C$ERHRD
     053710  000774                                                            .WORD   508
     053712  056341                                                            .WORD   T34WTM
     053714  011700                                                            .WORD   PKTSSR
7320 053716                            110$:   CKLOOP                          ;LOOP IF SELECTED
     053716  104406                                                            TRAP    C$CLP1
7321                                    ;
7322                                    ;*************************************************************************
7323                                    ;
7324                                    ;       NOW CHECK TO BE SURE EOT IS STILL SET
7325                                    ;
7326                                    ;*************************************************************************
7327                                    ;
7328 053720  013701  055446                    MOV     T34BFR+6,R1             ;PICK UP XSTO
7329 053724  010102                            MOV     R1,R2                   ;SET UP EXPECTED
7330 053726  052702  000001                    BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7331 053732  020102                            CMP     R1,R2                   ;WAS THE BIT ON
7332 053734  001406                            BEQ     120$                    ;BR. IF EOT WAS FOUND
7333 053736  004737  020106                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7337 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
```

```
7389 054104  020102                    CMP     R1,R2                   ;WAS THE BIT ON
7390 054106  001406                    BEQ     150$                    ;BR, IF TMK WAS FOUND
7391 054110  004737  020106            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7395 054114                            ERRHRD  ERRNO,T34TM . XPREC     ;TMK (XSTO) NOT SET
     054114  104456                                                    TRAP    C$ERHRD
     054116  001000                                                    .WORD   512
     054120  056751                                                    .WORD   T34TMK
     054122  016350                                                    .WORD   EXPREC
7396 054124                    150$:   CKLOOP                          ;LOOP IF SELECTED
     054124  104406                                                    TRAP    C$CLP1
7397                                   ;
7398                                   ;*************************************************************************
7399                                   ;
7400                                   ;       ISSUE SPACE RECORDS REVERSE FOR 1 RECORD, STILL BEYOND EOT
7401                                   ;
7402                                   ;*************************************************************************
7403                                   ;
7404 054126  012737  140410  055550            MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
7405 054134  012737  000001  055552            MOV     #1,T34W8                ;SPACE ONE RECORD REVERSE
7406 054142  012704  055550                    MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7407 054146  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7408 054152  004737  017124                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7409 054156  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7410 054162  012702  100204                    MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
7411 054166  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
7412 054170  001006                            BNE     160$                    ;BR, IT MIGHT BE END OF TAPE
7413 054172  004737  020106                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7417 054176                                    ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE RECORDS REVERSE FAILED
     054176  104456                                                            TRAP    C$ERHRD
     054200  001001                                                            .WORD   513
     054202  055676                                                            .WORD   T34POS
     054204  011700                                                            .WORD   PKTSSR
7418 054206                    160$:   CKLOOP                          ;LOOP IF SELECTED
     054206  104406                                                            TR ?    C$CLP1
7419                                   ;
7420                                   ;*************************************************************************
7421                                   ;
7422                                   ;       EOT SHOULD STILL BE SET
7423                                   ;
7424                                   ;*************************************************************************
7425                                   ;
7426 054210  013701  055446                    MOV     T34BFR+6,R1             ;PICK UP XSTO
7427 054214  010102                            MOV     R1,R2                   ;SET UP EXPECTED
7428 054216  052702  000001                    BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7429 054222  020102                            CMP     R1,R2                   ;WAS THE BIT ON
7430 054224  001406                            BEQ     163$                    ;BR, IF EOT WAS FOUND
7431 054226  004737  020106                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7435 054232                                    ERRHRD  ERRNO,T34ETS,EXPREC     ;EOT BIT (XSTO) NOT SET
     054232  104456                                                            TRAP    C$ERHRD
     054234  001002                                                            .WORD   514
     054236  056601                                                            .WORD   T34ETS
     054240  016350                                                            .WORD   EXPREC
7436 054242                    163$:   CKLOOP                          ;LOOP IF SELECTED
     054242  104406                                                            TRAP    C$CLP1
7437                                   ;
7438                                   ;*************************************************************************
7439                                   ;
```

```
7440                                    ;       HOWEVER, THE TMK BIT SHOULD NOW BE CLEAR
7441                                    ;
7442                                    ;*******************************************************************************
7443                                    ;
7444 054244  013701  055446                    MOV     T34BFR+6,R1             ;PICK UP XSTO
7445 054250  010102                            MOV     R1,R2                   ;SET UP EXPECTED
7446 054252  042702  100000                    BIC     #BIT15,R2               ;CLEAR THE TMK BIT ON IN EXPECTED
7447 054256  020102                            CMP     R1,R2                   ;WAS THE BIT ON
7448 054260  001406                            BEQ     165$                    ;BR, IF TMK WAS FOUND
7449 054262  004737  020106                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7453 054266                                    ERRHRD  ERRNO,T34TMN,EXPREC     ;COULD NOT CLEAR TMK (ZSTO)
     054266  104456                                                                    TRAP    C$ERHRD
     054270  001003                                                                    .WORD   515
     054272  057515                                                                    .WORD   T34TMN
     054274  016350                                                                    .WORD   EXPREC
7454 054276                            165$:   CKLOOP                          ;LOOP IF SELECTED
     054276  104406                                                                    TRAP    C$CLP1
7455                                    ;
7456                                    ;*******************************************************************************
7457                                    ;
7458                                    ;       NOW SPACE 3 RECORDS IN REVERSE
7459                                    ;
7460                                    ;*******************************************************************************
7461                                    ;
7462 054300  012737  140410  055550            MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
7463 054306  012737  000003  055552            MOV     #3,T34W8                ;SPACE THREE RECORD REVERSE
7464 054314  012704  055550                    MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7465 054320  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7466 054324  004737  017124                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7467 054330  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7468 054334  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
7469 054340  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
7470 054342  001406                            BEQ     167$                    ;BR, IT MIGHT BE END OF TAPE
7471 054344  004737  020106                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7475 054350                                    ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE RECORDS COMMAND FAILED
     054350  104456                                                                    TRAP    C$ERHRD
     054352  001004                                                                    .WORD   516
     054354  055676                                                                    .WORD   T34POS
     054356  011700                                                                    .WORD   PKTSSR
7476 054360                            167$:   CKLOOP                          ;LOOP IF SELECTED
     054360  104406                                                                    TRAP    C$CLP1
7477                                    ;
7478                                    ;*******************************************************************************
7479                                    ;
7480                                    ;       NOW THE EOT BIT SHOULD BE CLEAR
7481                                    ;
7482                                    ;*******************************************************************************
7483                                    ;
7484 054362  013701  055446                    MOV     T34BFR+6,R1             ;PICK UP XSTO
7485 054366  010102                            MOV     R1,R2                   ;SET UP EXPECTED
7486 054370  042702  000001                    BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
7487 054374  020102                            CMP     R1,R2                   ;WAS THE BIT OFF
7488 054376  001404                            BEQ     170$                    ;BR, IF EOT WAS FOUND
7492 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
```

```
7544 054544  012704  055550                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7545 054550  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7546 054554  004737  017124                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7547 054560  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7548 054564  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7549 054570  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7550 054572  001406                        BEQ     2058                    ;BR, ONLY SSR IS SET
7551 054574  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7555 054600                                ERRHRD  ERRNO,T34RRE,PKTSSR     ;READ REVERSE COMMAND FAILED
     054600  104456                                                                TRAP    C$ERHRD
     054602  001010                                                                .WORD   520
     054604  056054                                                                .WORD   T34RRE
     054606  011700                                                                .WORD   PKTSSR
7556 054610                        2058:   CKLOOP                          ;LOOP IF SELECTED
     054610  104406                                                                TRAP    C$CLP1
7557                                ;
7558                                ;*****************************************************************
7559                                ;
7560                                ;       NOW ISSUE A READ REVERSE COMMAND
7561                                ;
7562                                ;*****************************************************************
7563 054612  012737  140401  055550        MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
7564 054620  013737  003076  055552        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7565 054626  012704  055550                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7566 054632  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7567 054636  004737  017124                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7568 054642  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7569 054646  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7570 054652  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7571 054654  001406                        BEQ     2108                    ;BR, IT MIGHT BE END OF TAPE
7572 054656  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7576 054662                                ERRHRD  ERRNO,T34RRE,PKTSSR     ;SECOND READ REVERSE COMMAND FAILED
     054662  104456                                                                TRAP    C$ERHRD
     054664  001011                                                                .WORD   521
     054666  056054                                                                .WORD   T34RRE
     054670  011700                                                                .WORD   PKTSSR
7577 054672                        2108:   CKLOOP                          ;LOOP IF SELECTED
     054672  104406                                                                TRAP    C$CLP1
7578                                ;
7579                                ;*****************************************************************
7580                                ;
7581                                ;       NOW ISSUE A READ COMMAND
7582                                ;
7583                                ;*****************************************************************
7584 054674  012737  140001  055550        MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
7585 054702  013737  003076  055552        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7586 054710  012737  066540  055556        MOV     #28000.,T34SZ           ;SET UP BUFFER SIZE (INC # OF BYTES)
7587 054716  012704  055550                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7588 054722  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7589 054726  004737  017124                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7590 054732  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7591 054736  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7592 054742  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7593 054744  001406                        BEQ     2308                    ;BR, IT MIGHT BE END OF TAPE
7594 054746  004737  020106                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7598 054752                                ERRHRD  ERRNO,T34RRF,PKTSSR     ;READ FORWARD COMMAND FAILED
     054752  104456                                                                TRAP    C$ERHRD
```

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     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$ERHRD
     055216  001016                                                            .WORD   526
     055220  056155                                                            .WORD   T34ETC
     055222  016350                                                            .WORD   EXPREC
7673 055224                        260$:   CKLOOP                          ;LOOP IF SELECTED
     055224  104406                                                            TRAP    C$CLP1
7674                                   ;
7675                                   ;*************************************************************************
7676                                   ;
7677                                   ;       NOW SPACE FORWARD 5 RECORDS AGAIN
7678                                   ;
7679                                   ;*************************************************************************
7680                                   ;
7681 055226  012737  140010  055550            MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1 CMD.
7682 055234  012737  000005  055552            MOV     #5,T34R8                ;NUMBER OF RECORDS TO SPACE
7683 055242  012704  055550                    MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7684 055246  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7685 055252  004737  017124                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7686 055256  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7687 055262  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
7688 055266  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
7689 055270  001406                            BEQ     270$                    ;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$ERHRD
055330  001020                                                                  .WORD   528
055332  056601                                                                  .WORD   T34ETS
055334  011700                                                                  .WORD   PKTSSR
                                ;
055336                          280$:   CKLOOP                          ;LOOP IF SELECTED
055336  104406                                                                  TRAP    C$CLP1
                                ;
                                ;*****************************************************************
                                ;
                                ;       ISSUE A REWIND COMMAND
                                ;
                                ;*****************************************************************
                                ;
055340  004737  010434                  JSR     PC,REWIND               ;REWIND CALL
055344  103411                          BCS     320$                    ;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$ERHRD
055362  001021                                                                  .WORD   529
055364  057246                                                                  .WORD   T34RWN
055366  011700                                                                  .WORD   PKTSSR
055370                          320$:   CKLOOP                          ;LOOP IF SELECTED
055370  104406                                                                  TRAP    C$CLP1
055372                          600$:
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 .
```

```
7738                                    ;*
7739                                    ;LOCAL STORAGE FOR THIS TEST
7740                                    ;-
7742 055412                                     .BLKB   10-<.-TUV2AE7>
7744 055420                             T34PACKET:                      ;COMMAND PACKET FOR TEST
7745 055420  100004                             .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH ACK
7746 055422  055430                             .WORD   T34DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
7747 055424  000000                             .WORD   0
7748 055426  000010                             .WORD   8.              ;STARTING VALUE OF BLOCK SIZE
7749 055430                             T34DATA:                        ;CHARACTERISTICS DATA BLOCK
7750 055430  055440                             .WORD   T34BFR          ;ADDRESS OF MESSAGE BUFFER
7751 055432  000000                             .WORD   0
7752 055434  000012                             .WORD   10.             ;LENGTH OF MESSAGE BUFFER
7753 055436  000000                             .WORD   0
7754 055440                             T34BFR: .BLKW   25.             ;MESSAGE BUFFER
7755                                    ;
7756                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
7757                                    ;
7759 055522                                     .BLKB   10-<.-TUV2AE7>
7761 055530                             T34PK2:
7762 055530  100006                             .WORD   100006          ;WRITE SUB SYS MEM COMMAND, AND ACK
7763 055532  055570                             .WORD   T34BF2          ;ADDRESS OF SELECT BLOCK DATA
7764 055534  000000                             .WORD   0
7765 055536  000006                             .WORD   6.              ;SIZE OF DATA PACKET
7766
7768 055540                                     .BLKB   10-<.-TUV2AE7>
7770 055550                             T34PK3:
7771 055550  100005                             .WORD   100005          ;WRITE COMMAND,  AND ACK
7772 055552                             T34RB:
7773 055552  000000                     T34WB:  .WORD   0               ;ADDRESS OF WRITE/READ BUFFER
7774 055554  000000                             .WORD   0
7775 055556  000000                     T34SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
7776                                            .EVEN
7777                                    ;
7778 055560  000000                     T34RSZ: .WORD   0               ;LARGEST TAPE RECORD IN BYTES
7779 055562  000000                     T34CNT: .WORD   0               ;TAPE RECORD COUNTER
7780 055564  000000                     T34DLY: .WORD   0               ;DELAY COUNTER
778
7782 055566  000000                     T34TRK: .WORD   0               ;HOLD TRACK NUMBER
7783                                    ;
7784                                    ;
7785 055570                             T34BF2:
7786 055570     010                     T34BS0: .BYTE   10              ;BSEL0 AREA
7787 055571     200                     T34BS1: .BYTE   200             ;BSEL1 AREA
7788 055572  000000                     T34S2:  .WORD   0               ;SEL 2 AREA
778? 055574  000000                     T34S3:  .WORD   0               ;DATA AREA
7790                                    ;
7791                                    ;
7792                                            .EVEN
7793                                    ;TAPE MOTION PACKET COMMAND VALUES
7794
7795 055576  100005                     T34WD:  .WORD   100005          ;WRITE DATA (NEXT)
7796 055600  100405                     T34WDR: .WORD   100405          ;WRITE DATA RETRY
7797 055602  102005                     T34CON: .WORD   102005          ;WRITE CONTINOUS
7798 055604  177777                             .WORD   177777          ;END OF DATA
7799
7800
```

```
7802
7803                                    ;+
7804                                    ;LOCAL TEXT MESSAGES FOR TEST
7805                                    ;-
7806
7807
7808
7809 055606  045  116  045  EWMSG:  .ASCIZ  '<NS>A Early Warning Indicator Just Received, Track = <D2>'
7810 055676  124  123  123  T34POS: .ASCIZ  'TSSR Incorrect After Positior (SPACE RECORDS) Command'
7811 055764  127  122  111  T34ETO: .ASCIZ  'WRITE TAPE MARK Beyond EOT Failed To Set EOT Bit (XSTO)'
7812 056054  122  105  101  T34RRE: .ASCIZ  'READ REVERSE Command At EOT Didn''t Give Normal Termination (TSSR)'
7813 056155  125  156  141  T34ETC: .ASCIZ  'Unable To Clear EOT Indication, (XSTO) Bit 0'
7814 056232  123  153  151  T34BOT: .ASCIZ  'Skip File Mark Reverse (over entire tape) Failed To Set BOT (XSTO) Bit'
7815 056341  127  122  111  T34WTM: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set Tape Status Alert'
7816 056430  127  122  111  T34ET2: .ASCIZ  'WRITE DATA Beyond EOT Failed To Set Tape Status Alert'
7817 056516  127  122  111  T34ETN: .ASCIZ  'WRITE DATA Beyond EOT Failed To Set EOT Bit (XSTO)'
7818 056601  123  120  101  T34ETS: .ASCIZ  'SPACE RECORDS Beyond EOT Failed To Set EOT Bit (XSTO)'
7819 056667  122  105  101  T34ETZ: .ASCIZ  'READ DATA Beyond EOT Failed To Set EOT Bit (XSTO)'
7820 056751  120  117  123  T34TMK: .ASCIZ  'POSITION Command Beyond EOT Into A Tape Mark Failed To Set TMK (XSTO)'
7821 057057  105  117  124  T34ET:  .ASCIZ  'EOT Not Found In 65000 3.5K Writes, (Use Shorter Tape)'
7822 057146  127  122  111  T34EOT: .ASCIZ  'WRITE DATA OVER EOT GAVE NO TAPE STATUS ALERT'
7823
7824 057224  117  160  145  TST34ID:        .ASCIZ  'Operations At EOT'
7825 057246  124  123  123  T34RWN: .ASCIZ  'TSSR Incorrect After Position (REWIND) Command'
7826 057325  124  123  123  T34STM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Beyond EOT Mark'
7827 057421  105  117  124  T34STE: .ASCIZ  'EOT (XSTO) Not Set After SKIP TAPE MARK REVERSE, Beyond EOT'
7828 057515  125  156  141  T34TMN: .ASCIZ  'Unable To Clear TMK (XSTO) Bit Using Space Command'
7829 057600  124  123  123  T34RRF: .ASCIZ  'TSSR Incorrect After READ FORWARD Command'
7830 057652  124  123  123  T34WOL: .ASCIZ  'TSSR Incorrect After SKIP FILE MARK REVERSE'
7831                                        .EVEN
7832                                    ;+
7833                                    ;
7834                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
7835                                    ;WRITE SUBSYSTEM MEMORY COMMAND
7836                                    ;
7837                                    ;-
7838
7839 057726                          T34REST:
7840 057726                                  SAVREG                          ;SAVE THE REGISTERS
7841 057732  012701  055420                  MOV     #T34PACKET,R1           ;START OF THE PACKET
7842 057736  012721  100004                  MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
7843 057742  012721  055430                  MOV     #T34DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
7844 057746  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
7845 057750  012721  000012                  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
7846 057754  012721  055440                  MOV     #T34BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
7847 057760  005021                          CLR     (R1)+
7848 057762  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
7849 057766  005021                          CLR     (R1)+
7850 057770  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
7851 057774  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
7852 060000  012762  177777  055440  64$:    MOV     #177777,T34BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
7853 060006  005742                          TST     -(R2)                   ;BUMP DOWN TO NEXT LOCATION
7854 060010  020227  000000                  CMP     R2,#0                   ;R2 AT ZERO YET
7855 060014  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
7856 060016  000207                          RTS     PC                      ;RETURN
7857
7858                                    ;
```

```
                                        ;       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-<.-TUV2A67>
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
7914
```

```
8986
8991
8997
8998
8999
9000                                            .SBTTL  HARDWARE PARAMETER CODING SECTION
9001
9002                                    ;++
9003                                    ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
9004                                    ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
9005                                    ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
9006                                    ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
9007                                    ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
9008                                    ; WITH THE OPERATOR.
9009                                    ;--
9010 065010                                     BGNHRD
     065010  000015                             .WORD L10061-L$HARD/2
     065012                             L$HARD::
9011
9012 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$HILIM
9013 065022                                     GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
     065022  001031                             .WORD   T$CODE
     065024  065073                             .WORD   HPM2
     065026  000000                             .WORD   T$LOLIM
     065030  000776                             .WORD   T$HILIM
9014 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
9015 065044                                     ENDHRD
                                                .EVEN
     065044                             L10061:
9016 065044      104     105     126    HPM1:    .ASCIZ  'DEVICE ADDRESS (TSSR) '
9017 065073      111     116     124    HPM2:    .ASCIZ  'INTERRUPT VECTOR    '
9018 065117      111     116     124    HPM3:    .ASCIZ  'INTERRUPT PRIORITY      '
9019                                            .EVEN
9020
```

SOFTWARE PARAMETER CODING SECTION

```
                                        .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::
                                        GPRML   SPM1,0,-1,YES                   ;GET RAM DUMP FLAG
065152  000130                          .WORD   T$CODE
065154  065174                          .WORD   SPM1
065156  177777                          .WORD   -1
                                        GPRML   SPM4,2,-1,YES                   ; GET ITERATION CONTROL.
065160  001130                          .WORD   T$CODE
065162  065240                          .WORD   SPM4
065164  177777                          .WORD   -1
                                        GPRML   SPM6,4,-1,YES                   ;GET EOT CHECK STATUS
065166  002130                          .WORD   T$CODE
065170  065270                          .WORD   SPM6
065172  177777                          .WORD   -1
                                        ENDSFT
065174                                  .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 CHECKIN' (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).
                                ;
```

```
 9059
 9060 065372                    PATCH::
 9061                           ;       .IF     NZ,.&377
 9062                           ;       .=.!377+1
 9063                           ;       .ENDC
 9064 065372                            LASTAD          ;SET LAST USED ADDRESS.
                                        .EVEN
      065372  065410                    .WORD T$FREE
      065374  000005                    .WORD T$SIZE
      065376                    L$LAST::
 9065                                   .SBTTL  HARD CODED P-TABLE
 9066                           ;++
 9067                           ;       DIAGNOSTIC IS PRE-PARAMETERIZED PER THIS TABLE
 9068                           ;--
 9069 065376                            BGNSETUP        1
 9070 065376                            BGNPTAB
      065376  000000                    .WORD   0
      065400  000003                    .WORD   L10065-./2-1
      065402                    L10063:
 9071 065402  172522                    .WORD           172522
 9072 065404  000224                    .WORD           224
 9073 065406  000240                    .WORD           PRIO5
 9074 065410                            ENDPTAB
      065410                    L10065:
 9075 065410                            ENDSETUP
 9076
 9077         000001                    .END
```

SYMBOL TABLE

```
ADDSSR  011772 G    C$AU  = 000052    DEBUGM  011464      E$LOAD= 000035      G$RADL= 000120
ADR     = 000020 G   C$AUTO= 000061    DEVCNT  002170 G    FATCHK  020106      G$RADO= 000020
AMBTSS  006332       C$BRK = 000022    DEVDRO  023574      FATERR= 000060      G$XFER= 000004
ASSEMB= 000010       C$BSEG= 000004    DEVNRD  023513      FATFLG  002172 G    G$YES = 000010
A1716 = 000003       C$BSUB= 000002    DEVNXR  023431      FAULTM  052527      HIADDR= 001400
BADDAT  003114 G     C$CEFG= 000045    DEVONL  023361      FERCM   011554      HIMEM = 007776
BADSSR  016554 G     C$CLCK= 000062    DEVSUM  023324      FIFEXP  012022 G    HOE   = 100000 G
BAR   = 174402       C$CLEA= 000012    DFPTBL  002124 G    FIF1MS  012074      HPM1    065044
BENBSW  002176 G     C$CLOS= 000035    DIAGMC= 000000      FIF2MS  012143      HPM2    065073
BIE   = 040000       C$CLP1= 000006    DLCYL = 000177      FILLME  020400      HPM3    065117
BIT0  = 000001 G     C$CVEC= 000030    DLDNER= 100200      FLLTSW  002722 G    IBE   = 010000 G
BIT00 = 000001 G     C$DCLN= 000044    DLERR = 177730      FNOINT  004117      IDU   = 000040 G
BIT01 = 000002 G     C$DODU= 000051    DLGETS= 000004      FORCER  002146 G    IER   = 020000 G
BIT02 = 000004 G     C$DRPT= 000024    DLRDHD= 000010      FREE    003076 G    IFAULT  004160
BIT03 = 000010 G     C$DU  = 000053    DLRDNH= 000016      FREEHI  003102      INCERK  017750
BIT04 = 000020 G     C$EDIT= 000003    DLSR  = 000013      FRESIZ  003100 G    INTCPC  017024
BIT05 = 000040 G     C$ERDF= 000055    DLUN  = 000006      FUSI    004021      INTFLA  017021
BIT06 = 000100 G     C$ERHR= 000056    DSBINT  017060      F$AU  = 000015      INTMAS  017020
BIT07 = 000200 G     C$ERRO= 000060    DUAD12  004545      F$AUTO= 000020      INTR    017072 G
BIT08 = 000400 G     C$ERSF= 000054    DUFLG   003064 G    F$BGN = 000040      INTREC  002174 G
BIT09 = 001000 G     C$ERSO= 000057    DUMMY   003034      F$CLEA= 000007      INTVEC  017022
BIT1  = 000002 G     C$ESCA= 000010    EF.CON= 000036 G    F$DU  = 000016      INTX    004202
BIT10 = 002000 G     C$ESEG= 000005    EF.NEW= 000035 G    F$END = 000041      IOKCKI= 000200
BIT11 = 004000 G     C$ESUB= 000003    EF.PWR= 000034 G    F$HARD= 000004      IOKSTP= 000001
BIT12 = 010000 G     C$ETST= 000001    EF.RES= 000037 G    F$HW  = 000013      IPRI    002162 G
BIT13 = 020000 G     C$EXIT= 000032    EF.STA= 000040 G    F$INIT= 000006      ISR   = 000100 G
BIT14 = 040000 G     C$GETB= 000026    EMAXDU  017703      F$JMP = 000050      IVEC    002160 G
BIT15 = 100000 G     C$GETW= 000027    EN    = 000000      F$MOD = 000000      IXE   = 004000 G
BIT2  = 000004 G     C$GMAN= 000043    ENAINT  017026      F$MSG = 000011      I$AU  = 000041
BIT3  = 000010 G     C$GPHR= 000042    ENVIRN  021540      F$PROT= 000021      I$AUTO= 000041
BIT4  = 000020 G     C$GPLO= 000030    EOTSEL  002140 G    F$PWR = 000017      I$CLN = 000041
BIT5  = 000040 G     C$GPRI= 000040    EPRTSW  002150 G    F$RPT = 000012      I$DU  = 000041
BIT6  = 000100 G     C$INIT= 000011    EPRT1   005676      F$SEG = 000003      I$HRD = 000041
BIT7  = 000200 G     C$INLP= 000020    EPRT2   005737      F$SOFT= 000005      I$INIT= 000041
BIT8  = 000400 G     C$MANI= 000050    EPRT3   006021      F$SRV = 000010      I$MOD = 000040
BIT9  = 001000 G     C$MEM = 000031    ERCM    011565      F$SUB = 000002      I$MSG = 000041
BOE   = 000400 G     C$MSG = 000023    ERRHI   002204 G    F$SW  = 000014      I$PROT= 000040
BRINIT  004361       C$OPEN= 000034    ERRK    017662      F$TEST= 000001      I$PTAB= 000041
BSEL0 = 000000       C$PNTB= 000014    ERRLO   002206 G    GDDAT   003116 G    I$PWR = 000041
BSEL1 = 000001       C$PNTF= 000017    ERRNO = 001021      GERRMA  002144 G    I$RPT = 000041
CHKAMB  016720       C$PNTS= 000016    ERRVEC= 000004 G    GETPAT  021104 G    I$SEG = 000041
CHKMAN  021410 G     C$PNTX= 000015    ERTABE  003334      GETSEL  021166 G    I$SETU= 000041
CHKTSS  017242       C$QIO = 000377    ERTABL  003134      G$CNTO= 000200      I$SFT = 000041
CKDROP  020160       C$RDBU= 000007    ESUM    017664      G$DELM= 000372      I$SRV = 000041
CKEMAX  020006       C$REFG= 000047    EVL   = 000004 G    G$DISP= 000003      I$SUB = 000041
CKMSG   011212 G     C$RESE= 000033    EWCHK   060020      G$EXCP= 000400      I$TST = 000041
CKMSG2  011332 G     C$REVI= 000003    EWMSG   055606      G$HILI= 000002      J$JMP = 000167
CKRAM   010534 G     C$RFLA= 000021    EXBCNT= 000010      G$LOLI= 000001      KIPAR0= 172340
CKRAM2  011110 G     C$RPT = 000025    EXPBRE  016356 G    G$NO  = 000000      KIPAR1= 172342
CMPMEM  020564       C$SEFG= 000046    EXPD    002200 G    G$OFFS= 000400      KIPAR2= 172344
CONFIG  020226       C$SPRI= 000041    EXPGOT  004435      G$OFSI= 000376      KIPAR3= 172346
COUNT   002256 G     C$SVEC= 000037    EXPGT2  004471      G$PRMA= 000001      KIPAR4= 172350
CSR   = 174400       C$TPRI= 000013    EXPMSG  002270 G    G$PRMD= 000002      KIPAR5= 172352
CSRADD  002156 G     DAR   = 174404    EXPREC  016350 G    G$PRML= 000000      KIPAR6= 172354
CTAB    003122 G     DATA    002260 G  EXTA    005236      G$RADA= 000140      KIPAR7= 172356
CTABE   003134 G     DATAFL  015070    EXTEND  005234      G$RADB= 000000      KIPDR0= 172300
CTABM   003122 G     DATASC  021142    E$END = 002100      G$RADD= 000040      KIPDR1= 172302
```

M16

SYMBOL TABLE

```
KIPDR2= 172304          L$PROT  021760 G      L10054  047546          O$DU  = 000001          O.OFST  061532
KIPDR3= 172306          L$PRT   002112 G      L10055  050334          O$ERRT= 000000          O.OLD   061130
KIPDR4= 172310          L$REPP  002062 G      L10056  051122          O$GNSW= 000001          O.OF1   061134
KIPDR5= 172312          L$REV   002010 G      L10057  060210          O$POIN= 000001          O.OP2   061200
KIPDR6= 172314          L$RPT   023062 G      L10060  055372          O$SETU= 000001          O.OP2A  061206
KIPDR7= 172316          L$SOFT  065152 G      L10061  065044          O.ADR1  064722          O.ORAB  060440
KTENAB  003106 G        L$SPC   002056 G      L10062  065174          O.ALL   063306          O.ORPC  060416
KTFLG   003104 G        L$SPCP  002020 G      L10063  065402          O.AS    061002          O.ORRB  060450
KTINIT  021626          L$SPTP  002024 G      L10065  065410          O.ASC   064271          O.P     064265
KTOFF   020252          L$STA   002030 G      MEMADD  013606 G        O.ASCI  062316          O.PCS   060430
KTON    020234          L$SW    002134 G      MENASC  021357          O.BACK  061266          O.PRNT  062554
LERRMA  002142 G        L$TEST  002114 G      MENERR  021304          O.BALL  063172          O.PROC  062132
LISTAL= 000001          L$TIML  002014 G      MENRES  021406          O.BD    064272          O.PROM  064300
LOE   = 040000 G        L$UNIT  002012 G      MESBFA  002720 G        O.BKP = 000016          O.RALL  061456
LOOPCN  002166 G        L10000  002132        MESBFN  014640          O.BKPT  061314          O.RCSR= 177560
LOOPCO  012760          L10001  002146        MESHEA  015023          O.BRK   062622          O.RDB = 177562
LOOPFL  003120 G        L10002  005232        MMVEC = 000250          O.BW    064252          O.REG   064204
LOT   = 000010 G        L10003  011676        MPR   = 174406          O.BYT   061040          O.REGT  060330
L$ACP   002110 G        L10004  011726        MSA.FR= 000006          O.BYT1  061032          O.REM   063456
L$APT   002036 G        L10005  011744        MSA.NO= 000000          O.CAD   064254          O.RSB   063412
L$AU    022554 G        L10006  011752        MSA.NR= 000004          O.CADV  063620          O.RSR   063362
L$AUT   002070 G        L10007  011770        MSA.VO= 000002          O.CLGT= 000035          O.RSTT  063552
L$AUTO  022760 G        L10010  012006        MSGEXP  012010 G        O.CLSE  064116          O.S     064263
L$CCP   002106 G        L10011  012020        MSGLOO  012716 G        O.COMP  062456          O.SCAN  060574
L$CLEA  023034 G        L10012  012072        MSGSTA  012202 G        O.CR    064275          O.SEMI  060774
L$CO    002032 G        L10013  012242        MSGSUB  013574 G        O.CRET  061122          O.SEQ   064270
L$DEPO  002011 G        L10014  012756        MS.ATT= 000006          O.CRLF  064150          O.SNGL  060520
L$DESC  003346 G        L10015  013604        MS.EXT= 000200          O.CRLS  064164          O.SPAC  064104
L$DESP  002076 G        L10016  013626        MS.RSD= 000001          O.CSR1  064266          O.STM = 000340
L$DEVP  002060 G        L10017  016354        MS.RSF= 000020          O.CSR2  064...          O.SVR   063322
L$DISP  065360 G        L10020  016362        MS.RST= 000010          O.CT    064744          O.SVTT  063524
L$DLY   002116 G        L10021  016370        NBA   = 002000          O.C1    062204          O.SWCH  064714
L$DTP   002040 G        L10022  016402        NEWPAS  022206          O.DCD   060550          O.T     064264
L$DTYP  002034 G        L10023  016424        NODEV   003066 G        O.DCDA  061126          O.TBIT  062062
L$DU    022652 G        L10024  016452        NOINIT  004237          O.DCDB  061454          O.TBT = 000020
L$DUT   002072 G        L10025  016612        NOINTR  004123          O.DCD1  060570          O.TCLS  060472
L$DVTY  003340 G        L10026  017122        NOITS   002136 G        O.DCD2  060564          O.TCSR= 177564
L$EF    002052 G        L10030  022504        NOMAN   021444          O.DOT   064256          O.TDB = 177566
L$ENVI  002044 G        L10031  022650        NP.IR = 000200          O.DUMP  062236          O.TL    064342
L$ETP   002102 G        L10032  022756        NP.LOO= 000040          O.EFF   061642          O.TRTC  064352
L$EXP1  002046 G        L10033  023032        NP.OUT= 000100          O.ERR   060540          O.TVEC= 000014
L$EXP4  002064 G        L10034  023060        NP.WRP= 000020          O.ERR1  061636          O.TYPE  064070
L$EXP5  002066 G        L10035  023322        NSI     004054          O.FCHR  064716          O.UIN   064766
L$HARD  065012 G        L10036  032324        NSINIT  004311          O.FCNT  064720          O.UPC   064702
L$HIME  002120 G        L10037  024310        NUL     004431          O.FTYP  063734          O.UPS   064704
L$HPCP  002016 G        L10040  024764        NULCR   004432          O.GET   064002          O.URO   064664
L$HPTP  002022 G        L10041  025466        NXM   = 004000          O.GO    062032          O.USP   064700
L$HW    002124 G        L10042  026332        NXR     003642          O.GO1   062110          O.WB1   061046
L$ICP   002104 G        L10043  041320        NXRERR  005202 G        O.GO2   062114          O.WDFG  064262
L$INIT  021770 G        L10044  033722        NXRX    003701          O.HIGH  064712          O.WRD   061016
L$LADP  002026 G        L10045  035316        NXTU    022220          O.LG  = 000010          O.WRD1  061062
L$LAST  065376 G        L10046  035670        OFL   = 000100          O.LGCH  064305          O.WSCH  061646
L$LOAD  002100 G        L10047  036332        ONEFIL= 000000          O.LGDR  060702          O.XXX   064260
L$LUN   002074 G        L10050  046636        O$APTS= 000000          O.LOW   064710          PASRPT  022252
L$MREV  002050 G        L10051  042214        O$AU  = 000001          O.MOVE  062414          PATCH   065372 G
L$NAME  002000 G        L10052  043004        O$BGNR= 000001          O.MSK   064706          PATDAT  021140
L$PRIO  002042 G        L10053  052776        O$BGNS= 000001          O.ODT   060212 G        PC.ERA= 002400
```

SYMBOL TABLE

```
PC.IER= 002000          PW.RDS= 000005          SC    = 100000          S2.UND= 000003          T$FREE= 065410
PC.NOO= 001000          PW.RFI= 000003          SCE   = 020000          TBLEND= 003034 G        T$GMAN= 000000
PC.REL= 000000          PW.WCT= 000006          SCME    004715          TCOASC  006173          T$HILI= 000007
PC.REW= 000400          PW.WFI= 000004          SDELAY  010330          TCOCOD  006374          T$LAST= 000001
PKBCNT= 000006          PW.WFM= 000007          SEEK  = 000006          TEMP1   003070 G        T$LOLI= 000000
PKHI  = 000004          PW.WMI= 000010          SELASC  021352          TEMP2   003072 G        T$LSYM= 010000
PKLOW = 000002          PW.WNP= 000011          SELDAT= 000004          TERCLS= 000016          T$LTNO= 000005
PKTADD  007272          PW.WTR= 000002          SEL2  = 000002          TESTNO= 000005          T$NEST= 000000
PKTFRM  007234          P.ACK = 100000          SETMAP  020274          TEXASC  006132          T$NS0 = 000000
PKTGET  011730 G        P.CMD = 000037          SETU    022304          TFCASC  006254          T$NS1 = 000005
PKTMES  011754 G        P.CONT= 000012          SFFMSG  011746 G        TIMEXP  016426 G        T$NS2 = 000002
PKTNEW  007327          P.CVC = 040000          SFHERR  003607          TIMSGO  016454          T$PCNT= 000000
PKTRAM  004647 G        P.FMT = 000140          SFIERR  003554          TINERR  011653          T$PTAB= 010064
PKTSSR  011700 G        P.FORM= 000011          SFIMSG  011666 G        TKB   = 177562          T$PTHV= 000001
PNT   = 001000 G        P.GETS= 000017          SFPTBL  002134 G        TKS   = 177560          T$PTNU= 000001
PRAMPK  013630          P.IE  = 000200          SIFLAG  003112 G        TMPBFR  002600 G        T$SAVL= 177777
PRBEXP  016344          P.INIT= 000013          SIMSG   011620          TNAM    017610          T$SEGL= 177777
PRBMSG  016212          P.MODE= 007400          SKIPT   003336          TPB   = 177566          T$SIZE= 000005
PRBREC  016346          P.OPP = 020000          SOFINI  016650 G        TPS   = 177564          T$SUBN= 000001
PRBTOT  016277          P.POSI= 000010          SPACE   010134 G        TRANST  002134 G        T$TAGL= 177777
PRBYTE  015776 G        P.READ= 000001          SPM1    065174          TSBA  = 177776 G        T$TAGN= 010066
PRI   = 002000 G        P.SWB = 010000          SPM4    065240          TSBAH = 177777 G        T$TEMP= 000006
PRIADD  007706          P.WRIT= 000005          SPM6    065270          TSBAL = 177776 G        T$TEST= 000005
PRIAO   007756          P.WRTC= 000004          SR0   = 177572          TSDB  = 177776 G        T$TSTM= 177777
PRIBXO  007340 G        P.WRTS= 000006          SR1   = 177574          TSDBM = 177777 G        T$TSTS= 000001
PRIEQU  007606          QVP     002154 G        SR2   = 177576          TSDBL = 177776 G        T$$AU = 010031
PRIPKT  007066 G        RAMASC  013776          SR3   = 172516          TSFCOD  006734          T$$AUT= 010033
PRIRAM  007614          RAMDAT  002210 G        SSR   = 000200          TSREJ = 000006          T$$CLE= 010034
PRITAD  010022          RAMER   010636 G        STATCO  012244          TSSDEF  006303          T$$DAT= 010065
PRITSS  005270          RAMERR  016364 G        SVCGBL= 000000          TSSR  = 000000 G        T$$DU = 010032
PRITO   010072          RAMEXP  016404 G        SVCINS= 000000          TSSRBI  003404 G        T$$HAR= 010061
PRIXOR  007470 G        RAMFHR  014542          SVCSUB= 000001          TSSRFO  006112          T$$HW = 010000
PRIO0 = 000000 G        RAMFOR  007644          SVCTAG= 000000          TSSRH = 000001 G        T$$INI= 010030
PRIO1 = 000040 G        RAMHLD  011020          SVCTST= 000001          TSSX    003722          T$$MSG= 010025
PRIO2 = 000100 G        RAMIOP  011024          S$LSYM= 010000          TSTBLK  002724 G        T$$PC = 000001
PRIO3 = 000140 G        RAMPD   011075          SO.IDB= 000010          TSTCNT  002164 G        T$$PRO= 010027
PRIO4 = 000200 G        RAMRSH  011022          SO.IFB= 000002          TSTEND  017624          T$$PTA= 010064
PRIO5 = 000240 G        RAMSIZ  002250 G        SO.IFP= 000001          TSTFLA  002262 G        T$$RPT= 010035
PRIO6 = 000300 G        RAMTAD  016372 G        SO.ILD= 000020          TSTLOO  017362 G        T$$SOF= 010062
PRIO7 = 000340 G        RBPCRA  015135          SO.ION= 000040          TSTPTR  002264 G        T$$SRV= 010026
PRMESS  014062          RCVHIA  002252 G        SO.IRD= 000100          TSTSET  017414 G        T$$SUB= 010060
PRMNO   002266 G        RCVLOA  002254 G        SO.IRW= 000004          TST29I  032111          T$$SW = 010001
PRMSGE  015426 G        RDERR   005110          SO.ISP= 000200          TST30I  041121          T$$TES= 010057
PRMSGO  015606          READ  = 000014          S1.ICE= 002000          TST31I  046413          T1      023644 G
PRMSG1  015653          READY = 000001          S1.IEO= 010000          TST32I  052470          T1.1    023704
PRMSG2  015711          RECMSG  002434 G        S1.IFM= 001000          TST34I  057224          T1.2    024312
PROASC  014720          RECV    002202 G        S1.IHE= 000400          TTIBFR= 177562 G        T1.3    024766
PR1ASC  014765          REGSAV  021044          S1.IID= 004000          TTICSR= 177560 G        T1.4    025470
PST32W  003110 G        REWIND  010434 G        S1.I1R= 020000          TTIVEC= 000060 G        T2      032326 G
PUNIT   022506          RMCHBE= 000167          S1.I2R= 040000          TTOBFR= 177566          T2.1    032362
PW.D11= 000021          RMCHEN= 000200          S1.PAR= 100000          TTOCSR= 177564          T2.2    033724
PW.D13= 000022          RMMSGB= 000104          S2.ATI= 000010          TUV2A   002000 G        T2.3    035320
PW.D22= 000020          RMMSGE= 000117          S2.BTI= 000004          T$ARGC= 000001          T2.4    035672
PW.NOP= 000000          RMPKTB= 000020          S2.DIM= 000200          T$CODE= 002130          T29AM3  030412
PW.NO1= 000023          RMPKTE= 000027          S2.ILW= 000100          T$ERRN= 001021          T298A   030754
PW.RDE= 000024          RMR   = 010000          S2.INR= 000020          T$EXCP= 000000          T298FR  026400
PW.RDR= 000001          RWPACK  010530          S2.OUT= 000040          T$FLAG= 000040          T298F2  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	T30BS1	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	T31R8	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	037341	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	T31WDD	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	T31WDH	043200	T34RES	057726	XST3	000014	G	
T29WDC	030607	T30WB	036512	T31WNG	043341	T34RRE	056054	XST4	000016	G	
T29WDD	030500	T30WDC	040252	T31WNH	043260	T34RRF	057600	XSOBOT	000002		
T29WDE	027632	T30WDD	037060	T31WRF	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$OFFS= 000400          X2.BUF= 000100          X3.DCK= 000010          X4.MSP= 100000
XSOWLE= 004000          X$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  01536.

. 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
.
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