Micro Fiche Scan

Name of device(s) tested:
    TU80
Test description:
    TU80 FRONT-END PRTD
MAINDEC Number or Package Identifier (after SEP 1977):
    CZTUZA0
Fiche Document Part Number:
    AH-T337A-MC
Fiche preparation date unknown, using copyright year:
    1983
Image resolution:
    8-bit gray levels, max. quality for archiving

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.REM\
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IDENTIFICATION

PRODUCT ID: AC-T336A-MC

PRODUCT TITLE: CZTUZA0 TU80 FRONT-END PRT D

PRODUCT DATE: 23 - MARCH -1983

MAINTAINER: TAPE DIAGNOSTIC ENGINEERING

AUTHOR: DICE SYSTEMS, INC.

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ABSTRACT

1.0 ABSTRACT

THIS IS A PDP-11 RESIDENT DIAGNOSTIC WHICH CHECKS THE FUNCTIONALITY OF A TU80 MAGTAPE SUBSYSTEM WHILE CONNECTED TO A PDP-11 SYSTEM. THE PROGRAM PROVIDES ERROR MESSAGES WHICH IDENTIFY FAILING FUNCTIONS THAT AID IN THE REPAIR OF THE DEVICE. REFERENCE THE FOLLOWING DIGITAL EQUIPMENT DOCUMENTS:

1. ENGINEERING SPECIFICATION FOR TU80 MAGTAPE CONTROLLER; DOCUMENT NUMBER: YM-C194D-022; REVISION NUMBER 2; DATE: 28-JUL-81.

2. ENGINEERING SPECIFICATION FOR TU80 DIAGNOSTIC PACKAGE; DOCUMENT NUMBER: YM-C194F-00; REVISION NUMBER 0; DATE: 2-SEP-81.

3. ENGINEERING SPECIFICATION FOR TU80 MAGTAPE SUBSYSTEM; DOCUMENT NUMBER: YM-C194S-02; REVISION NUMBER 3; DATE: 10-JUN-81.

4. CIQPMA0 XXDP+ PROGRAMMER'S MANUAL; DOCUMENT NUMBER AC-S296A-AC; DATE: 14 JULY 1980.

2.0 HARDWARE, SOFTWARE REQUIREMENTS AND PREREQUISITES

2.1 HARDWARE REQUIREMENTS

PDP-11 FAMILY PROCESSOR WITH 32K WORDS OF MEMORY
TU80 MAGTAPE SUBSYSTEM (DRIVE AND CONTROLLER)
CAUTION:DIAGNOSTIC REQUIRES 32K WORDS OF MEMORY
(28K USEABLE I.E. 4K FOR I/O PAGE)

2.2 OPTIONAL HARDWARE:

UP TO 4 TU80 CONTROLLERS PER PDP-11 UP TO 1 DRIVE PER CONTROLLER

2.3 SOFTWARE REQUIREMENTS

PDP-11 DIAGNOSTIC SUPERVISOR (HSAAD0)
PDP-11 DIAGNOSTIC LOADER/MONITOR (XXDP+)

2.4 PREREQUISITES

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

OPERATING INSTRUCTIONS

3.0 OPERATING INSTRUCTIONS

3.1 OPERATOR COMMANDS

THE TU80 DIAGNOSTIC IS A PDP-11 DIAGNOSTIC SUPERVISOR COMPATIBLE PROGRAM. ALL LOADING AND RUNTIME INSTRUCTIONS CAN BE REFERENCED IN THE PDP-11 PROGRAMMER'S MANUAL "CIQPMA0 XXDP+ PROGRAMMERS MANUAL, NUMBER AC-S296A-AC. THE OPERATOR RESPONSE IS IN QUOTES.

BOOT THE DIAGNOSTIC XXDP MEDIA

```
CHMDLB0 XXDP+ DL MONITOR 28K
BOOTED VIA UNIT 0
ENTER DATE (DD-MMM-YR):"29-JAN-82"
RESTART ADDRESS: 153726
50 HZ? N " <CR> "
LSI? N  " Y<CR> "
THIS IS XXDP+. TYPE "H" OR "H/L" FOR DETAILS
R CZTUZA0
CZTUZABINDRS LOADED
DIAG. RUN-TIME SERVICES REV D. APR 79
CZTUZ-A-0
****TU80 LOGIC DIAGNOSTIC****
UNIT IS TU80
DR> " STA/FLA: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) RESPONSE TO THE "CHANGE HW?" QUESTION, THE DIAGNOSTIC WILL NOT RUN. IT WILL GIVE THE MESSAGE "NO UNIT". A "Y" IS REQUIRED AND AT LEAST A "1" IS REQUIRED AT THE "# UNITS (D)?" QUESTION.

TSBA/TSDB = 172522, VECTOR = 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

OPERATING INSTRUCTIONS

DEFAULT VALUE THAT WILL BE TAKEN IF ONLY 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)" INDICATES THAT A LOGICAL RESPONSE IS TO BE MADE: "Y" FOR YES, "N" FOR NO.

```
# UNITS (D) ?  <ENTER THE NUMBER OF M7454 CONTROLLERS
                PRESENT TO BE TESTED>

UNIT 0

DEVICE ADDRESS  (O) 172522 ? <ENTER THE ADDRESS OF THE
                              TSSR 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 EIGHT 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.>
```

OPERATING INSTRUCTIONS - SAMPLE PRINTOUTS

4.0 OPERATING INSTRUCTIONS - SAMPLE PRINTOUTS

4.1 SUCCESSFUL RUN EXAMPLE (PDP-11)

```
 TST: 001 WRITE TAPE MARK RETRY TEST
TST: 002 SKIP TAPE MARKS TEST
TST: 003 NO-OP AND INITIALIZE TEST
TST: 004 ERASE AND OPERATION INCOMPLETE TEST
TST: 005 TEST OF OPERATIONS AT EOT TEST
TST: 006 FUNCTION TIMING TEST

0 ERRORS

NOTE: PROGRAM NOW STARTS OVER AGAIN AT TEST 1
```

OPERATING INSTRUCTIONS - SAMPLE ERROR MESSAGES

5.0 OPERATING INSTRUCTIONS - SAMPLE ERROR MESSAGES

ERROR MESSAGE EXAMPLE 1

```
TST: 001 FIFO EXERCISER TEST
CZTUZ HRD ERR 01610 ON UNIT 00 TST 016 SUB 002 PC: 040624
FIFO STATUS (IN WORD  9) INCORRECT AFTER WRITE FIFO

 TAPE BUS SIGNALS IN WORD #8: - DESIGNATOR <BIT #>
PARERR<15>  IEOT  <12>  IFMK  <9>  IRDY<6>  IRWD<2>
IRESV2<14>  IIDENT<11>  IHER  <8>  IONL<5>  IFBY<1>
IRESV1<13>  ICER  <10>  ISPEED<7>  ILDP<4>  IFPT<0>
 TAPE BUS SIGINALS IN WORD #9:
DATMIS<7>  ILW<6>  OUTRDY<5>  INRDY<4>
 MESSAGE BUFFER ADDRESS = 047352
 MESSAGE BUFFER CONTENTS:
WORD #0 EXPD: 100020  RECV: 100020  XOR: 000000
WORD #1 EXPD: 000012  RECV: 000012  XOR: 000000
WORD #2 EXPD: 000000  RECV: 000000  XOR: 000000
WORD #3 EXPD: 000010  RECV: 000010  XOR: 000000
WORD #4 EXPD: 000000  RECV: 000000  XOR: 000000
WORD #5 EXPD: 000000  RECV: 000000  XOR: 000000
WORD #6 EXPD: 000000  RECV: 000000  XOR: 000000
WORD #7 EXPD: 000000  RECV: 000000  XOR: 000000
WORD #8 EXPD: 070217  RECV: 070217  XOR: 000000
WORD #9 EXPD: 000074  RECV: 000034  XOR: 000040
```

ERROR MESSAGE EXAMPLE 2

```
CZTUZ HRD ERR 00159 ON UNIT 00 TST 001 SUB 005 PC: 026202
TSSR NOT CORRECT AFTER SPACE RECORDS COMMAND
 TSSR = 100214
 TSSR BITS SET: SC,SSR
 TERMINATION CLASS CODE = UNRECOVERABLE ERROR
 PACKET ADDRESS = 026420
 PACKET WORD #  = 140010
 PACKET WORD #  = 000010
 PACKET WORD #  = 000000
 PACKET WORD #  = 000024
```

ERROR MESSAGE EXAMPLE 3

```
CZTUZ HRD ERR 00121 ON UNIT 00 TST 001 SUB 002 PC: 023306
MOT BIT (XSTO) NOT SET DURING REWIND (EXTENDED FEATURES MODE)
 EXPD: 000312 RECV: 000112 XOR: 000200
```

6.0 PROGRAM RUN TIMES

THE AVERAGE RUN TIMES OF THE PROGRAM ARE LISTED BELOW.THESE FIGURES ARE TO BE USED AS A GUIDE. THE TIMING WAS DONE ON A PDP-11/23) PROCESSOR WITH A LA-34 CONSOLE.

THE PROGRAM RUNS IN TWO MODES; NO ITERATIONS AND DEFAULT MODE. IN THE NO ITERATIONS MODE, EACH TEST IS RUN ONCE, WITH NO ITERATIONS. IN THE DEFAULT MODE EACH TEST IS REPEATED BY THE NUMBER OF TIMES INDICATED BY THE ITERATION COUNT. NO ITERATIONS MODE IS SELECTED BY ANSWERING THE INHIBIT ITERATIONS QUESTION WITH A "Y" (YES).

TEST NUMBER	N/I SECS.	NUMBER ITER	DEF SECS.
1	1	1	0
2	1	1	0
3	1	1	0
4	1	1	0
5	1	1	0
6	1	1	0

THE TIMES REQUIRED TO RUN TESTS 1 THROUGH 37 IN ONE COMMAND:

Q.V.	15 SECONDS
DEFAULT	16 SECONDS

7.0 TEST SUMMARIES

7.1 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:

7.1.1 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.

7.1.2 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.

7.1.3 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).

7.1.4 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 SPACE RECORDS REVERSE COMMANDS IN SUCCESSION. THE SECOND SPACE RECORDS REVERSE COMMAND SHOULD TERMINATE WITH REVERSE INTO BOT (RIB) STATUS SET.

7.2 TEST 2 - SKIP TAPE MARKS

```
**********************************************************************
* NOTE: THIS TAPE 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 STuP 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.

7.2.1 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 COMMAND ISSUED AND THE RESULTS (TAPE STATUS ALERT TERMINATION, TMK=1, STATUS, TAPE POSITION VIA READ COMMAND) 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.

7.2.2 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.

7.2.3 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.

7.2.4 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.

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

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

7.3.1 TEST 3, SUBTEST 1;-

VERIFIES THAT THE NO-OP COMMAND (CURRESPONDS TO THE CLEAN TAPE COMMAND) TERMINATES PROPERLY (NORMAL TERMINATION), STORES PROPER STATUS IN THE MESSAGE BUFFER (LIKE THE GET STATUS COMMAND), AND INDEED DOE 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.

7.3.2 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.

7.4 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 UN-RECOVERABLE 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:

7.4.1 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.

7.4.2 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.

7.4.3 TEST 4, SUBTEST 3:-

VERIFIES THAT AN ERASE COMMAND ENCOUNTERING THE EOT MARKER, OR EXECUTED BEYOND THE EOT MARKER, CAUSES TAPE STATUS ALERT TERMINATION WITH THE EOT STATUS BIT SET. ALSO VERIFIES THAT THE OTHER TAPE MOTION COMMANDS EXECUTED WHEN THE TAPE IS BLANK RESULTS IN UNRECOVERABLE ERROR TERMINATION AND OPERATION INCOMPLETE STATUS. THE FOLLOWING TEST SEQUENCE IS EXECUTED:

1. THE TAPE IS REWOUND.

2. ERASE COMMANDS ARE REPEATEDLY ISSUED UNTIL EOT STATUS IS SEEN. AN ERROR IS REPORTED IF ANY TERMINATION OTHER THAN NORMAL (WITH EOT=0), OR TAPE STATUS ALERT TERMINATION (WITH EOT=1) IS ENCOUNTERED. IF THE CONTROLLER OR TRANSPORT DOES NOT DETECT THE EOT, THE TRANSPORT WILL FAULT. THIS IS REPORTED AS A FATAL ERROR AND THE TEST IS ABORTED.

3. AN ADDITIONAL ERASE COMMAND IS ISSUED AND IT IS VERIFIED THAT TAPE STATUS ALERT TERMINATION RESULTS, WITH EOT=1.

4. 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.

NEXT STEP: IF BUFFERING IS ENABLED, IT IS DISABLED VIA THE BUFFER CONTROL FIELD IN THE EXTENDED CHARACTERISTICS DATA WORD SUPPLIED BY A WRITE.

7.5 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 ATPE 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 SKIP FILE MARKS REVERSE COMMAND IS ISSUED, WHICH SHOULD SKIP ALL THE WAY TO BOT, AND IT IS CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=0, BOT=1, AND RIB=1.

7.6 TEST 6 - FUNCTION TIMING

```
**************************************************************************
* 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 TAPE TRANSPORT SEEMS TO BE WRITING RECORDS, GAPS, AND EXTENDED GAPS OF THE PROPER LENGTH. BOTH LOW AND HIGH SPEED MODES ARE TESTED. IT IS ALSO VERIFIED THAT A SPACE RECORDS COMMAND WITH A RECORD COUNT OF 80 OR MORE, AND A SKIP TAPE MARKS COMMAND WITH A COUNT OF 2 OF MORE, OPERATE THE TAPE IN HIGH-SPEED MODE. THIS TEST CAN ONLY BE RUN IF A REAL-TIME CLOCK IS AVAILIABLE ON THE SYSTEM. THE TEST OPERATES BY TIMING VARIOUS TAPE-MOTION OPERATIONS, USING A NUMBER OF DIFFERENT TEST RECORD LENGTHS.

```
                                        .SBTTL  PROGRAM HEADER

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

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


                                        POINTER BGNSW,BGNSFT,BGNAU,BGNDU,BGNRPT,BGNSETUP
                                        HEADER  CZTUZ,A,0,655.,0
002000                          L$NAME::                ;DIAGNOSTIC NAME
002000  103                             .ASCII /C/
002001  132                             .ASCII /Z/
002002  124                             .ASCII /T/
002003  125                             .ASCII /U/
002004  132                             .ASCII /Z/
002005  000                             .BYTE   0
002006  000                             .BYTE   0
002007  000                             .BYTE   0
002010                          L$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$HPCP::                ;POINTER TO H.W. QUES.
002016  071224                          .WORD   L$HARD
002020                          L$SPCP::                ;POINTER TO S.W. QUES.
002020  071364                          .WORD   L$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$LADP::                ;DIAG. END ADDRESS
002026  072332                          .WORD   L$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$DTP::                 ;PTR. TO DISPATCH TABLE
002040  071552                          .WORD   L$DISPATCH
002042                          L$PRIO::                ;DIAGNOSTIC RUN PRIORITY
```

PROGRAM HEADER

```
002042  000000                  .WORD   0
002044                  LSENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
002044  000000                  .WORD   0
002046                  LSEXP1::                ;EXPANSION WORD
002046  000000                  .WORD   0
002050                  LSMREV::                ;SVC REV AND EDIT #
002050     003                  .BYTE   C$REVISION
002051     003                  .BYTE   C$EDIT
002052                  LSEF::                  ;DIAG. EVENT FLAGS
002052  000000                  .WORD   0
002054  000000                  .WORD   0
002056                  LSSPC::
002056  000000                  .WORD   0
002060                  LSDEVP::                ; POINTER TO DEVICE TYPE LIST
002060  003334                  .WORD   LSDVTYP
002062                  LSREPP::                ;PTR. TO REPORT CODE
002062  023052                  .WORD   LSRPT
002064                  LSEXP4::
002064  000000                  .WORD   0
002066                  LSEXP5::
002066  000000                  .WORD   0
002070                  LSAUT::                 ;PTR. TO ADD UNIT CODE
002070  022550                  .WORD   LSAU
002072                  LSDUT::                 ;PTR. TO DROP UNIT CODE
002072  022646                  .WORD   LSDU
002074                  LSLUN::                 ;LUN FOR EXERCISERS TO FILL
002074  000000                  .WORD   0
002076                  LSDESP::                ;POINTER TO DIAG. DESCRIPTION
002076  003342                  .WORD   LSDESC
002100                  LSLOAD::                ;GENERATE SPECIAL AUTOLOAD EMT
002100  104035                  EMT     ESLOAD
002102                  LSETP::                 ;POINTER TO ERRTBL
002102  000000                  .WORD   0
002104                  LSICP::                 ;PTR. TO INIT CODE
002104  021752                  .WORD   LSINIT
002106                  LSCCP::                 ;PTR. TO CLEAN-UP CODE
002106  023030                  .WORD   LSCLEAN
002110                  LSACP::                 ;PTR. TO AUTO CODE
002110  022754                  .WORD   LSAUTO
002112                  LSPRT::                 ;PTR. TO PROTECT TABLE
002112  021742                  .WORD   LSPROT
002114                  LSTEST::                ;TEST NUMBER
002114  000000                  .WORD   0
002116                  LSDLY::                 ;DELAY COUNT
002116  000000                  .WORD   0
002120                  LSHIME::                ;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  000004                 .WORD   L10001-L$SW/2
002134                  L$SW::
002134                  SFPTBL::

002134  000000          TRANSCT::       .WORD   0       ;ENABLE RAM DUMP IF =1
002136  000000          NOITS::         .WORD   0       ; INHIBIT ITERATION OPTION.
                                                        ; ... 0 = ITERATE.
                                                        ; ...NZ = INHIBIT ITERATE.
002140  000031          LERRMAX::       .WORD   25.     ; LOCAL (PER TEST) ERROR LIMIT
002142  000310          GERRMAX::       .WORD   200.    ; GLOBAL (PER UNIT) ERROR LIMIT
002144                          ENDSW
002144                  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          PRI07== 340
                000300          PRI06== 300
                000240          PRI05== 240
                000200          PRI04== 200
                000140          PRI03== 140
                000100          PRI02== 100
                000040          PRI01== 40
                000000          PRI00== 0
                                ;
                                ;OPERATOR FLAG BITS
                                ;
                000004          EVL==     4
                000010          LOT==    10
                000020          ADR==    20
                000040          IDU==    40
                000100          ISR==   100
                000200          UAM==   200
                000400          BOE==   400
                001000          PNT==  1000
                002000          PRI==  2000
                004000          IXE==  4000
                010000          IBE== 10000
                020000          IER== 20000
                040000          LOE== 40000
                100000          HOE== 100000
801
                                KT11    ,,      ;DEFINE MEMORY MANAGEMENT REGISTERS
802 002144                      .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  TU80 REGISTER AND PACKET DEFINITIONS

                        ;
                        ; SOME GENERAL EQUATES.
                        ;

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

                        ;+
                        ;BIT DEFINITIONS FOR TSSR REGISTER
                        ;-

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


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

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


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

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

                        ;+
                        ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 2
                        ;(XST2)
                        ;-
                        X2.OPM  = BIT15                 ;OPERATION IN PROGRESS (TAPE MOVING)
                        X2.RCE  = BIT14                 ;RAM CHECKSUM ERROR
                        X2.SPARE= BIT13+BIT12+BIT11+BIT9+BIT8   ;NOT USED BY TU80 (ALWAYS=0)
                        X2.WCF  = BIT10                 ;WRITE CLOCK FAILURE (FIFO NOT EMPTIED BY TRANSPORT)
                        X2.EXTF = BIT7                  ;IF WRITE CHAR CMD THEN = EXTENDED FEATURES ENABLED
                        X2.BUFE = BIT6                  ;IF WRITE CHAR CMD THEN = BUFFERING ENABLED
                        X2.REV  = 000077                ;IF WRITE CHAR CMD THEN = MICROCODE REVISION LEVEL
                        X2.UNIT = BIT2+BIT1+BIT0        ;IF GET STATUS THEN = CURRENTLY SELECTED UNIT NO.

                        ;+
                        ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 3
                        ;(XST3)
                        ;-
                        X3.MDE  = 177400                ;MICRO-DIAGNOSTIC ERROR CODE
                        X3.SPARE= BIT7                  ;NOT USED BY TU80
                        X3.OPI  = BIT6                  ;OPERATION INCOMPLETE
                        X3.REV  = BIT5                  ;REVERSE
                        X3.TRF  = BIT4                  ;TRANSPORT RESPONSE FAILURE
                        X3.DCK  = BIT3                  ;DENSITY CHECK
                        X3.MBZ  =BIT2+BIT1              ;NOT USED ALWAYS 0
                        X3.RIB  = BIT0                  ;REVERSE INTO BOT

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


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

                                TSREJ=  3*2                     ;COMMAND REJECTED
                                UNREC=  6                       ;UNRECOVERABLE ERROR

                        ;+
                        ;
                        ;DEVICE REGISTER OFFSETS
                        ;
```

```
                                ;-
                                
177776                          TSBA==  -2
177776                          TSBAL== -2
177776                          TSDB==  -2                      ;TSDB/TSBA REGISTER
177776                          TSDBL== -2                      ;TSDB/TSBA REGISTER
177777                          TSBAH== -1
177777                          TSDBH== -1                      ;TSDB/TSBA REGISTER HIGH BYTE
000000                          TSSR==  0                       ;TSSR REGISTER
000001                          TSSRH== 1                       ;TSSR REGISTER HIGH BYTE

                                ;+
                                ; TSDB ADDRESS BIT DEFINITIONS
                                ;-
000003                          A1716   = BIT1+BIT0             ;ADDRESS BITS 17;16 ARE IN 1;0

                                ;+
                                ; COMMAND DEFINITIONS
                                ;-
000017                          P.GETSTAT       = 17            ;GET STATUS
000013                          P.INIT          = 13            ;INITIALIZE
000012                          P.CONTROL       = 12            ;CONTROL COMMANDS
000011                          P.FORMAT        = 11            ;FORMAT
000010                          P.POSITION      = 10            ;POSITION
000006                          P.WRTSUB        = 6             ;SUBSYSTEM WRITE
000005                          P.WRITE         = 5             ;WRITE
000004                          P.WRTCHAR       = 4             ;WRITE CHARACTERISTICS
000001                          P.READ          = 1             ;READ

                                ;+
                                ; COMMAND PACKET HEADER WORD BIT DEFINITIONS
                                ;-
100000                                  P.ACK   = BIT15                 ;BUFFER AVAIL FOR CONTROLLER
040000                                  P.CVC   = BIT14                 ;CLEAR VOLUME CHECK
020000                                  P.OPP   = BIT13                 ;REVERSE SEQUENCE OF DATA BITS
010000                                  P.SWB   = BIT12                 ;SWAP BYTES IN MEMORY
007400                                  P.MODE  = BIT11!BIT10!BIT9!BIT8 ;EXTENDED COMMAND MODE FIELD
000200                                  P.IE    = BIT7                  ;INTERRUPT ENABLE
000140                                  P.FMT= BIT6!BIT5                ;PACKET HEADER TYPE (ALWAYS=0)
000037                                  P.CMD   = 37                    ;MAJOR COMMAND FIELD

                                ;+
                                ; CONTROL COMMAND MODE CODES
                                ;-
000000                                  PC.RELEASE      = 0*256.        ;RELEASE BUFFER
000400                                  PC.REWIND       = 1*256.        ;REWIND
001000                                  PC.NOOP         = 2*256.        ;NO-OP
002000                                  PC.IEREW        = 4*256.        ;REWIND IMMEDIATE INTERRUPT
002400                                  PC.ERASE        = 5*256.        ;SECURITY ERASE

                                ;+
                                ; CONTROLLER RAM DEFINITIONS
                                ;-
000167                          RMCHBEG = 167                   ;CHARACTERISTICS IO DATA BEGIN RAM ADDRESS
000200                          RMCHEND = 200                   ;CHARACTERISTICS IO DATA END RAM ADDRESS
000020                          RMPKTBEG= 20                    ;COMMAND PACKET BEGIN RAM ADDRESS
000027                          RMPKTEND= 27                    ;COMMAND PACKET END RAM ADDRESS
000104                          RMMSGBEG= 104                   ;MESSAGE BUFFER BEGIN RAM ADDRESS
```

```
                        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

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

```
                                WC.IOTAD        = BIT6                  ;ITAD0  - TRANSPORT ADDRESS BIT 0
                                WC.I1TAD        = BIT5                  ;ITAD1  - TRANSPORT ADDRESS BIT 1
                                WC.I5RESV       = BIT4                  ;IRESV5 - RESERVED #5
                                WC.IREW         = BIT3                  ;IREW   - REWIND
                                WC.IRWU         = BIT2                  ;IRWU   - REWIND AND UNLOAD
                                WC.IFEN         = BIT1                  ;IFEN   - FORMATTER ENABLE
                                WC.IGO          = BIT0                  ;GO

                                ;+
                                ;BSEL1 CODES FOR WRITE FORMAT
                                ;-
                                WF.IHISP        = BIT7                  ;IHISP  - HIGH SPEED
                                WF.IWRT         = BIT6                  ;IWRT   - WRITE
                                WF.IREV         = BIT5                  ;IREV   - REVERSE
                                WF.IWFM         = BIT4                  ;IWFM   - WRITE FILE MARK
                                WF.IEDIT        = BIT3                  ;IEDIT  - EDIT
                                WF.IERASE       = BIT2                  ;IERASE - ERASE
                                WF.I3RESV       = BIT1                  ;IRESV3 - RESERVED #3
                                WF.I4RESV       = BIT0                  ;IRESV4 - RESERVED #4


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

                                S2.DIM          = BIT7                  ;WORD #9 BYTE 2 DATA IN MISS
                                S2.ILW          = BIT6                  ;               ILW H
                                S2.OUTRDY       = BIT5                  ;               OUT RDY H
                                S2.INRDY        = BIT4                  ;               IN RDY H
                                S2.ATIMR        = BIT3                  ;               TIMER A FLAG H
                                S2.BTIMR        = BIT2                  ;               TIMER B FLAG H
                                S2.UNDEF        = BIT1+BIT0             ;(UNDEFINED)
                                S1.PARIN        = BIT15                 ;WORD #8 BYTE 1 PARIN H
                                S1.I2RESV       = BIT14                 ;               IRESV2
                                S1.I1RESV       = BIT13                 ;               IRESV1
```

```
1092    010000                  S1.IEOT         = BIT12                 ;                       IEOT L
1093    004000                  S1.IIDENT       = BIT11                 ;                       IIDENT H
1094    002000                  S1.ICER         = BIT10                 ;                       ICER H
1095    001000                  S1.IFMK         = BIT9                  ;                       IFMK H
1096    000400                  S1.IHER         = BIT8                  ;                       IHER H
1097    000200                  S0.ISPEED       = BIT7                  ;WORD #8 BYTE 0         ISPEED H
1098    000100                  S0.IRDY         = BIT6                  ;                       IRDY L
1099    000040                  S0.IONL         = BIT5                  ;                       IONL L
1100    000020                  S0.ILDP         = BIT4                  ;                       ILDP L
1101    000010                  S0.IDBY         = BIT3                  ;                       IDBY L
1102    000004                  S0.IRWD         = BIT2                  ;                       IRWD L
1103    000002                  S0.IFBY         = BIT1                  ;                       IFBY L
1104    000001                  S0.IFPT         = BIT0                  ;                       IFPT L
1105                    ;       SPECIAL KEYBORD STUFF FOR MOVER PROGRAM
1106
1107    177560                  TKS     =177560                 ;KEYBOARD STATUS REGISTER
1108    177562                  TKB     =177562                 ;KEYBOARD DATA REGISTER
1109    177564                  TPS     =177564                 ;CONSOLE PRINTER STATUS REGISTER
1110    177566                  TPB     =177566                 ;CONSOLE PRINTER DATA REGISTER
1111    007776                  HIMEM   =007776                 ;HIGH MEMORY MASK VALUE
1112                    ;       CONTROLLER DEFINITIONS
1113    174400                  CSR     =174400                 ;STATUS AND CONTROL REGISTER
1114    174402                  BAR     =174402                 ;DL ADDRESS REGISTER
1115    174404                  DAR     =174404                 ;PLATTER ADDRESS
1116    174406                  MPR     =174406                 ;MULTIPURPOSE REGISTER
1117                    ;
1118                    ;       CONTROLLER COMMANDS
1119                    ;
1120    000004                  DLGETS  =4                      ;GET STATUS COMMAND
1121    000006                  SEEK    =6                      ;SEEK TRACK AND HEAD SELECT
1122    000010                  DLRDHD  =10                     ;READ SECTOR HEADER
1123    000014                  READ    =14                     ;READ COMMAND
1124    000016                  DLRDNH  =16                     ;READ SECTOR NO HEADER CHECK
1125                    ;
1126    000001                  READY   =1                      ;DRIVE READY BIT IN STATUS REG.
1127    000013                  DLSR    =13                     ;STATUS AND RESET
1128    177730                  DLERR   =177730                 ;MASK FOR COVER OPEN
1129    000006                  DLUN    =6                      ;HEADS UNLOADED
1130    000177                  DLCYL   =000177                 ;MASK FOR CYLINDER ADDRESS
1131    100200                  DLDNER  =100200                 ;DONE SET OR ERROR SET BITS
1132
1133    071566                  ROMBASE =       MOVER           ;START OF THE BOOT ROM aaaaa
1134    177560                  TTICSR  =       177560          ;KEYBOARD INPUT STATUS
1135    177562                  TTIBFR  =       177562          ;KEYBOARD DATA REGISTER
1136    177564                  TTOCSR  =       177564          ;CONSOLE PRINTER STATUS REGISTER
1137    177566                  TTOBFR  =       177566          ;CONSOLE PRINTER DATA REGISTER
```

```
                        .SBTTL  SPECIAL MACROS AND OPDEFS.


                ;+
                ;SAVE GENERAL REGS 1 TO 5
                ;-

                        .MACRO  SAVREG
                        JSR     R5,REGSAV
                        .ENDM

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

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

                ;+
```

```
                                ;MACRO TO PERFORM XOR
                                ;-

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

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

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

002144  000000                  FORCER::        0       ; FORCE TYPE ALL HARD ERRORS (THE ONES CALLED -
                                                ; - BY THE MACRO "IFERROR").  AN ERROR NEED NOT -
                                                ; - EXIST, JUST ASSUME AND TYPE THE MESSAGE.
```

```
                                .SBTTL  GLOBAL DATA SECTION

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

                        ;
                        ;THE FOLLOWING DATA ARE SET FOR EACH UNIT AT INIT TIME.
                        ;SINGLE UNIT DEFAULTS (LISTED) ARE IN THE DEFAULT P-TABLE.
                        ;
002146  000000          EPRTSW::        .WORD   0               ;PRINT SWITCH
002150  000000          UNITN::         .WORD   0               ;UNIT # UNDER TEST.
002152  000000          QVP::           .WORD   0               ;QUICK VERIFY FLAG.
002154  000000          CSRADDR::       .WORD   0               ;ADDRESS OF CSR FOR CURRENT DEVICE
002156  000224          IVEC::          .WORD   224             ;INTERRUPT VECTOR
002160  000200          IPRI::          .WORD   PR104           ;INTERRUPT PRIORITY.
002162  000000          TSTCNT::        .WORD   0               ;NUMBER OF TESTS RUN IN THIS PASS
002164  000000          LOOPCNT::       .WORD   0               ;REMAINING ITERATION COUNT FOR TEST
002166  000000          DEVCNT::        .WORD   0               ;NUMBER OF DEVICE UNDER TEST
002170  000000          FATFLG::        .WORD   0               ;SET IF FATAL ERROR IS DETECTED IN TEST
002172  000000          INTRECV::       .WORD   0               ;SET IF TAPE INTERRUPT WAS RECEIVED
002174  000000          BENBSW::        .WORD   0               ;BUFFER ENABLE SWITCH SW 0=OFF;1=ON
002176  000000          EXPD::          .WORD   0               ;EXPECTED RAM DATA FOR PRAMPKT ROUTINE
002200  000000          RECV::          .WORD   0               ;RECEIVED RAM DATA FOR PRAMPKT ROUTINE
002202  000000          ERRHI::         .WORD   0               ;HIGH ADDRESS MEMORY ERROR
002204  000000          ERRLO::         .WORD   0               ;LUW ADDRESS MEMORY ERROR
002206                  RAMDATA::       .BLKW   16.             ;DATA READ FROM RAM PACKET OR MESSAGE BUF AREA
002246  000000          RAMSIZ::        .WORD   0               ;RAM DATA SIZE FOR PRAMPKT ROUTINE
002250  000000          RCVHIADD::      .WORD   0               ;RECEIVED BUFFER HIGH ADDRESS
002252  000000          RCVLOADD::      .WORD   0               ;RECEIVED BUFFER LOW ADDRESS
002254  000000          COUNT::         .WORD   0               ;TEST COUNT PATTERN
002256  000000          DATA::          .WORD   0               ;TEST DATA
002260  000000          TSTFLAG::       .WORD   0               ;TEST FLAG WORD
002262  000000          TSTPTR::        .WORD   0               ;TSTBLK POINTER
002264  000000          PRMNO::         .WORD   0               ;PRINT ROUTINE TEMP
002266                  EXPMSG::        .BLKB   100.            ;EXPECTED MESSAGE BUFFER DATA
002432                  RECMSG::        .BLKB   100.            ;RECEIVED MESSAGE BUFFER DATA
002576                  TMPBFR::        .BLKB   80.             ;TEMPORARY STORAGE FOR PRINT
002716  000000          MESBFA::        .WORD   0               ;STORES ADDRESS OF MESSAGE BUFFER FOR ERR PRT
```

```
                                .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
                        ;
                        ;-

002720                  TSTBLK::
002720  000000                  .WORD   0                       ;ALL ZEROS
002722  177777                  .WORD   177777                  ;ALL ONES
002724  000001                  .WORD   BIT0                    ;DATA FOR WALKING ONES
002726  000002                  .WORD   BIT1
002730  000004                  .WORD   BIT2
002732  000010                  .WORD   BIT3
002734  000020                  .WORD   BIT4
002736  000040                  .WORD   BIT5
002740  000100                  .WORD   BIT6
002742  000200                  .WORD   BIT7
002744  000400                  .WORD   BIT8
002746  001000                  .WORD   BIT9
002750  002000                  .WORD   BIT10
002752  004000                  .WORD   BIT11
002754  010000                  .WORD   BIT12
002756  020000                  .WORD   BIT13
002760  040000                  .WORD   BIT14
002762  100000                  .WORD   BIT15
002764  177776                  .WORD   ^CBIT0                  ;DATA FOR WALKING ZEROS
002766  177775                  .WORD   ^CBIT1
002770  177773                  .WORD   ^CBIT2
002772  177767                  .WORD   ^CBIT3
002774  177757                  .WORD   ^CBIT4
002776  177737                  .WORD   ^CBIT5
003000  177677                  .WORD   ^CBIT6
003002  177577                  .WORD   ^CBIT7
003004  177377                  .WORD   ^CBIT8
003006  176777                  .WORD   ^CBIT9
003010  175777                  .WORD   ^CBIT10
003012  173777                  .WORD   ^CBIT11
003014  167777                  .WORD   ^CBIT12
003016  157777                  .WORD   ^CBIT13
003020  137777                  .WORD   ^CBIT14
003022  077777                  .WORD   ^CBIT15
003024  125252                  .WORD   125252                  ;ALTERNATING ONES, ZEROS
003026  052525                  .WORD   052525                  ;ALTERNATING ONES, ZERO OPPOSITE FROM ABOVE
003030          TBLEND==.
```

```
                                        .SBTTL  GLOBAL ENVIRONMENT STORAGE
                                ;
                                ;STORAGE FOR DEVICE REGISTERS
                                ;
003030  000000  100000  000000  DUMMY:  0,100000,0,0                ;DUMMY DEVICE REGISTERS...
003040  000000  000000  000000          0,0,0,0,0,0,0,0
                                                                    ;...FOR MULTI-UNIT CHECKOUT.


003060  000000                  DUFLG::         .WORD   0           ;"DROPPED UNIT" FLAG.
                                                                    ;INHIBITS CODE IN "CLEAN-UP".
003062  000000                  NODEV::         .WORD   0           ;FLAG TO SAY NO DEVICE.

003064  000000                  TEMP1::         .WORD   0           ;SOME TEMP LOCATIONS.
003066  000000                  TEMP2::         .WORD   0
003070  000000                  XXCOMM::        .WORD   0           ;XXDP+ COMM BLOCK POINTER.
003072  000000                  FREE::          .WORD   0           ;1ST FREE MEMORY ADDRESS...
003074  000000                  FRESIZ::        .WORD   0           ;...AND SIZE (IN WORDS).
003076  000000                  FREEHI:         .WORD   0           ;LAST WORD IN FREE SPACE
003100  000000                  KTFLG::         .WORD   0           ;KT11, MEM AVAIL FLAG -
                                                                    ;- .WORD        0 = <24K OR NO KT -
                                                                    ;- NZ = >24K AND KT.
003102  000000                  KTENABLE::      .WORD   0           ;SET BY TEST ROUTINES TO FLAG >28K UNDER TEST
003104  002000                  PST32W::        .WORD   2000        ;32W BLOCK ADDRESS FOR 32K START
003106  000000                  SIFLAG::        .WORD   0           ;
003110  000000                  BADDAT::        .WORD   0           ;ACTUAL DATA
003112  000000                  GDDAT::         .WORD   0           ;EXPECTED DATA
003114  000000                  LOOPFL::        .WORD   0
003116                          CTAB::                              ;CONFIGURATION TABLES.
003116  000000                  CTABM::         .WORD   0           ;CONFIG WORK.
003120  000000                                  .WORD   0
003122  000000                                  .WORD   0
003124  000000                                  .WORD   0
003126  177777                                  .WORD   -1          ;END OF MEM TABLE.
003130                          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
                                ;
003130                          ERTABL:         .BLKW   64.
003330  000000                  ERTABE:         .WORD   0

003332  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
                                ;-

                                        DEVTYP  <TU80>
                                LSDVTYP::
003334  124     125     070             .ASCIZ  /TU80/
                                        .EVEN

                                ;+
                                ;TEST DESCRIPTION
                                ;-
                                        DESCRIPT <CZTUZA0 TU80 FRONT END PRT D>
                                LSDESC::
003342  103     132     124             .ASCIZ  /CZTUZA0 TU80 FRONT END PRT D/
                                        .EVEN



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

003400  003440  003443  003447  TSSRBIT::        .WORD   1$,2$,3$,4$,5$,6$,7$,8$
003420  003501  003505  003511                  .WORD   9$,10$,11$,12$,13$,14$,15$,16$
003440    123     103     000   1$:     .ASCIZ  'SC'
003443    102     111     105   2$:     .ASCIZ  'BIE'
003447    123     103     105   3$:     .ASCIZ  'SCE'
003453    122     115     122   4$:     .ASCIZ  'RMR'
003457    116     130     115   5$:     .ASCIZ  'NXM'
003463    116     102     101   6$:     .ASCIZ  'NBA'
003467    102     111     124   7$:     .ASCIZ  'BIT9'
003474    102     111     124   8$:     .ASCIZ  'BIT8'
003501    123     123     122   9$:     .ASCIZ  'SSR'
003505    117     106     114   10$:    .ASCIZ  'OFL'
003511    102     111     124   11$:    .ASCIZ  'BIT5'
003516    102     111     124   12$:    .ASCIZ  'BIT4'
003523    102     111     124   13$:    .ASCIZ  'BIT3'
003530    102     111     124   14$:    .ASCIZ  'BIT2'
003535    102     111     124   15$:    .ASCIZ  'BIT1'
003542    102     111     124   16$:    .ASCIZ  'BIT0'
                                .EVEN
003550    124     123     123   SFIERR: .ASCIZ  'TSSR ERROR AFTER SOFT INIT'
003603    124     123     123   SFHERR: .ASCIZ  'TSSR ERROR AFTER BUS RESET'
003636    040     040     116   NXR:    .ASCIZ  /  NON-EXISTANT DEVICE REGISTER/
003675    045     101     040   NXRX:   .ASCIZ  /%A  ADDRESS: %O6/
003716    045     101     040   TSSX:   .ASCII  /%A  TSBA,TSSR EXP'D: %O6%A,%O6%N/
003756    045     101     040           .ASCIZ  /%A  TSBA,TSSR REC'D: %O6%A,%O6/
```

```
1417 004015  045  116  045  FUSI:    .ASCII  /%N%A/
1418 004021  040  040  125  USI:     .ASCIZ  /  UNEXPECTED INTERRUPT/
1419 004050  040  040  111  NSI:     .ASCIZ  /  INTERRUPT EXPECTED, NOT RECEIVED/
1420 004113  045  116  045  FNOINTR:         .ASCII  /%N%A/
1421 004117  040  040  116  NOINTR:  .ASCIZ  /  NO INTERRUPT WAS GENERATED/
1422 004154  040  040  111  IFAULT:  .ASCIZ  /  INTERRUPT FAULT/
1423 004176  045  101  040  INTX:    .ASCIZ  /%A  CPU PC: %06%A  TSBA: %06/
1424 004233  040  040  042  NOINIT:  .ASCIZ  /  "BUS-INIT" DIDN'T INITIALIZE CONTROLLER/
1425 004305  040  040  042  NSINIT:  .ASCIZ  /  "SOFT-INIT" DIDN'T INITIALIZE THE DPU/
1426 004355  040  040  042  BRINIT:  .ASCIZ  /  "BUS-RESET" DIDN'T INITIALIZE THE DPU/
1427
1428 004425  000            NUL:     .ASCIZ  //
1429 004426  045  116  000  NULCR:   .ASCIZ  /%N/
1430 004431  045  101  040  EXPGOT:  .ASCIZ  /%A EXP'D: %06%A, REC'D: %06/
1431 004465  045  116  045  EXPGT2:  .ASCIZ  /%N%A EXP'D: %06%A, %06%N%A REC'D: %0%A, %06/
1432 004541  045  101  040  DUAD12:  .ASCIZ  /%A REG(W) WRITTEN TO: %06%A REG(R) READ; EXP'D: %06%A, REC'D: %06/
1433 004643  122  101  115  PKTRAM::         .ASCIZ  'RAM Contents Do Not Match Packet Sent'
1434 004711  040  040  103  SCME:    .ASCIZ  /  CONFIG DOESN'T MATCH MFG. MASTER/
1435 004754  127  122  111  WRTMSG:  .ASCIZ  'WRITE CHARACTERISTICS Failed'
1436 005011  124  123  123  WRTERR:  .ASCIZ  'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
1437 005104  124  123  123  RDERR:   .ASCIZ  'TSSR Incorrect After READ Command, More Bits Set Than SSR'
1438                                  .EVEN
1439
1440
1441
```

```
                                        .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.
                                ;--

                                        BGNMSG  NXRERR                  ;NON-EXISTANT DEVICE REGISTER.
005176                          NXRERR::
005176                                  PRINTX  #NXRX,NODEV             ;NODEV = NEXM ADDRESS.
005176  013746  003062                   MOV     NODEV,-(SP)
005202  012746  003675                   MOV     #NXRX,-(SP)
005206  012746  000002                   MOV     #2,-(SP)
005212  010600                           MOV     SP,R0
005214  104415                           TRAP    C$PNTX
005216  062706  000006                   ADD     #6,SP
005222  004737  005230                   JSR     PC,EXTEND               ; PRINT EXTENSION IF REQUIRED.
005226                                  ENDMSG
005226                          L10002:
005226  104423                          TRAP    C$MSG


                                ;
                                ; THIS ROUTINE APPENDS A UNIQUE EXTENSION (IF REQUIRED)
                                ; TO ANY OF THE ABOVE ERROR SIGNATURES.
                                ;
005230  005727                  EXTEND: TST     (PC)+
005232  000000                  EXTA:   0                               ; 0 = NO EXTENSION.
005234  001402                          BEQ     1$
005236  004777  177770                  JSR     PC,@EXTA                ; APPEND EXTENSION TEXT.
005242                          1$:     PRINTX  #NULCR                  ; PRINT A BLANK LINE
005242  012746  004426                   MOV     #NULCR,-(SP)
005246  012746  000001                   MOV     #1,-(SP)
005252  010600                           MOV     SP,R0
005254  104415                           TRAP    C$PNTX
005256  062706  000004                   ADD     #4,SP
005262  000207                          RTS     PC
```

```
                                .SBTTL  PRITSSR - PRINT TSSR CONTENTS

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

                        PRITSSR:
005264                          SAVREG                          ;SAVE GENERAL REGISTERS
005264  010104                  MOV     R1,R4                   ;SAVE THE TSSR CONTENTS
005270                          PRINTB  #TSSRFOR,R4             ;PRINT THE CONTENTS OF TSSR
005272  010446                  MOV     R4,-(SP)
005274  012746  006106          MOV     #TSSRFOR,-(SP)
005300  012746  000002          MOV     #2,-(SP)
005304  010600                  MOV     SP,R0
005306  104414                  TRAP    C$PNTB
005310  062706  000006          ADD     #6,SP
005314  010400                  MOV     R4,R0                   ;GET TSSR BACK FOR CHKAMB
005316  004737  016704          JSR     PC,CHKAMB               ;ARE CONTENTS AMBIGUOUS ?
005322  103410                  BCS     5$                      ;BRANCH IF NOT
005324                          PRINTX  #AMBTSSR                ;SHOW CONTENTS ARE AMBIGUOUS
005324  012746  006326          MOV     #AMBTSSR,-(SP)
005330  012746  000001          MOV     #1,-(SP)
005334  010600                  MOV     SP,R0
005336  104415                  TRAP    C$PNTX
005340  062706  000004          ADD     #4,SP
005344  010403          5$:     MOV     R4,R3                   ;CONTENTS OF TSSR
005346  042703  001476          BIC     #HIADDR!FATERR!TERCLS,R3        ;CLEAR ALL MULTIPLE BIT FIELDS
005352  001434                  BEQ     20$                     ;NO BITS ARE SET
005354  012702  002576          MOV     #TMPBFR,R2              ;TEMPORARY ASCII BUFFER
005360  012701  003400          MOV     #TSSRBIT,R1             ;ASCII EQUIVALENT OF BITS
005364  005703          10$:    TST     R3                      ;REMAINING BITS TO CONVERT
005366  001413                  BEQ     15$                     ;BRANCH WHEN ALL ARE DONE
005370  000241                  CLC                             ;CLEAR CARRY FOR SHIFT
005372  006103                  ROL     R3                      ;SHIFT NEXT BIT TO CARRY
005374  103006                  BCC     13$                     ;BRANCH IF BIT NOT SET
005376  011100                  MOV     (R1),R0                 ;POINTER TO BIT DEFINITION
005400  112022          11$:    MOVB    (R0)+,(R2)+             ;MOVE ASCIZ TO BUFFER
005402  001376                  BNE     11$                     ;MOVE ALL BITS
005404  112762  000054  177777  MOVB    #',,-1(R2)              ;INSERT A COMMA TO TERMINATE
005412  005721          13$:    TST     (R1)+                   ;POINT TO NEXT DESCRIPTION
005414  000763                  BR      10$                     ;GET THE REMAINING BITS
005416  105042          15$:    CLRB    -(R2)                   ;TERMINATE THE LINE
005420                          PRINTX  #TSSDEF,#TMPBFR         ;PRINT THE BIT DEFINITIONS
005420  012746  002576          MOV     #TMPBFR,-(SP)
005424  012746  006277          MOV     #TSSDEF,-(SP)
```

```
                005430  012746  000002                  MOV     #2,-(SP)
                005434  010600                          MOV     SP,R0
                005436  104415                          TRAP    C$PNTX
                005440  062706  000006                  ADD     #6,SP
          1513
          1514  005444  010403                  20$:    MOV     R4,R3                   ;GET THE TSSR CONTENTS
          1515  005446  042703  177761                  BIC     #^CTERCLS,R3            ;CLEAR ALL BUT TERMINATION
          1516  005452  016303  006370                  MOV     TCOCOD(R3),R3           ;GET THE TERMINATION CODE MEANING
          1517  005456                                  PRINTX  #TCOASC,R3              ;PRINT THE TERMINATION CODE
                005456  010346                          MOV     R3,-(SP)
                005460  012746  006167                  MOV     #TCOASC,-(SP)
                005464  012746  000002                  MOV     #2,-(SP)
                005470  010600                          MOV     SP,R0
                005472  104415                          TRAP    C$PNTX
                005474  062706  000006                  ADD     #6,SP
          1518  005500  010403                          MOV     R4,R3                   ;TSSR CONTENTS AGAIN
          1519  005502  042703  177717                  BIC     #^CFATERR,R3            ;CLEAR ALL BUT FATAL TERMINATION
          1520  005506  001421                          BEQ     25$                     ;DON'T PRINT IF ZERO
          1521  005510  006203                          ASR     R3
          1522  005512  006203                          ASR     R3
          1523  005514  006203                          ASR     R3                      ;ALINE TERMINATION CODE FOR INDEX
          1524  005516  016303  006730                  MOV     TSFCOD(R3),R3           ;GET THE FATAL TERMINATION CODE
          1525  005522                                  PRINTX  #TFCASC,R3              ;PRINT THE FATAL TERMINATION CODE
                005522  010346                          MOV     R3,-(SP)
                005524  012746  006230                  MOV     #TFCASC,-(SP)
                005530  012746  000002                  MOV     #2,-(SP)
                005534  010600                          MOV     SP,R0
                005536  104415                          TRAP    C$PNTX
                005540  062706  000006                  ADD     #6,SP
          1526  005544  012737  000031  002170          MOV     #25.,FATFLG             ;DROP THIS UNIT AFTER ERROR MESSAGE
          1527  005552  010403                  25$:    MOV     R4,R3                   ;GET TSSR CONTENTS
          1528  005554  042703  176377                  BIC     #^CHIADDR,R3            ;CLEAR ALL BUT EXTENDED ADDRESS
          1529  005560  001411                          BEQ     30$                     ;DON'T PRINT IF ZERO
          1530  005562                                  PRINTX  #TEXASC,R3              ;PRINT THE EXTENDED ADDRESS BITS
                005562  010346                          MOV     R3,-(SP)
                005564  012746  006126                  MOV     #TEXASC,-(SP)
                005570  012746  000002                  MOV     #2,-(SP)
                005574  010600                          MOV     SP,R0
                005576  104415                          TRAP    C$PNTX
                005600  062706  000006                  ADD     #6,SP
          1531  005604  022704  100210          30$:    CMP     #100210,R4              ;CHECK FOR MEDIA ERROR
          1532  005610  001003                          BNE     31$                     ;BR, IF PROBABLY NOT TAPE ERROR
          1533  005612  012737  006015  002146          MOV     #EPRT3,EPRTSW           ;"PROBABLY MEDIA RELETED ERROR - BAD TAPE"
          1534  005620  005737  002146          31$:    TST     EPRTSW                  ;CHECK FOR THE SWITCH EMPTY
          1535  005624  001003                          BNE     310$                    ;BR, IF SWITCH IS NOT EMPTY
          1536  005626  012737  005672  002146          MOV     #EPRT1,EPRTSW           ;SET SWITCH TO DEFAULT
          1537  005634  013737  002146  005644  310$:   MOV     EPRTSW,32$+2            ;PUT REAL SWITCHABLE MESSAGE IN PLACE
          1538  005642                          32$:    PRINTB  #EPRT1                  ;PRINT THE ERROR MESSAGE
                005642  012746  005672                  MOV     #EPRT1,-(SP)
                005646  012746  000001                  MOV     #1,-(SP)
                005652  010600                          MOV     SP,R0
                005654  104414                          TRAP    C$PNTB
                005656  062706  000004                  ADD     #4,SP
          1539  005662  012737  005672  002146          MOV     #EPRT1,EPRTSW           ;RESET TO NORMAL ERROR POINTER
          1540  005670  000207                          RTS     PC                      ;RETURN TO CALLER
          1541
          1542  005672      045      116      045  EPRT1:  .ASCIZ  '%N%A *****CHECK TRANSPORT*****%S'
```

```
1543 005733     045     116     045  EPRT2:  .ASCIZ  '%N%A *****CHECK PARITY SWITCH IN TRANSPORT*****%S'
1544 006015     045     116     045  EPRT3:  .ASCIZ  '%N%A *****POSSIBLE MEDIA RELATED ERROR - BAD TAPE*****%S'
1545 006106     045     116     045  TSSRFOR:        .ASCIZ  '%N%A TSSR = %O6'
1546 006126     045     116     045  TEXASC:         .ASCIZ  '%N%A Extended Address Bits = %O6'
1547 006167     045     116     045  TCOASC:         .ASCIZ  '%N%A Termination Class Code = %T'
1548 006230     045     116     045  TFCASC:         .ASCIZ  '%N%A Fatal Termination Class Code = %T'
1549 006277     045     116     045  TSSDEF:         .ASCIZ  '%N%A TSSR Bits Set: %T'
1550 006326     045     116     045  AMBTSSR:        .ASCIZ  '%N%A TSSR Contents Are Ambiguous'
1551                                                 .EVEN
1552 006370  006410  006433  006461  TCOCOD: .WORD   1$,2$,3$,4$,5$,6$,7$,8$
1553 006410     116     157     162  1$:     .ASCIZ  'Normal Termination'
1554 006433     124     145     162  2$:     .ASCIZ  'Termination Condition'
1555 006461     124     141     160  3$:     .ASCIZ  'Tape Status Alert'
1556 006503     106     165     156  4$:     .ASCIZ  'Function Reject'
1557 006523     122     145     143  5$:     .ASCIZ  'Recoverable Error - Tape Position One Record Down'
1558 006605     122     145     143  6$:     .ASCIZ  'Recoverable Error - Tape Was Not Moved'
1559 006654     125     156     162  7$:     .ASCIZ  'Unrecoverable Error'
1560 006700     106     141     164  8$:     .ASCIZ  'Fatal Controller Error'
1561                                         .EVEN
1562
1563 006730  006740  006774  007005  TSFCOD: .WORD   1$,2$,3$,4$
1564 006740     111     156     164  1$:     .ASCIZ  'Internal Diagnostic Failure'
1565 006774     122     145     163  2$:     .ASCIZ  'Reserved'
1566 007005     102     165     163  3$:     .ASCIZ  'Bus Interface or Sanity Check Error'
1567 007051     122     145     163  4$:     .ASCIZ  'Reserved'
1568                                         .EVEN
```

```
                                        .SBTTL  PRIPKT  - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET
                                ;+
                                ;THIS ROUTINE PRINTS THE ADDRESS AND CONTENTS OF A COMMAND PACKET.
                                ;THIS ROUTINE IS NORMALLY ONLY CALLED FROM A PRINT ROUTINE.
                                ;INPUT:
                                ;       R0      NUMBER OF WORDS IN PACKET
                                ;       R3      HIGH ORDER COMMAND PACKET ADDRESS
                                ;       R4      ADDRESS OF COMMAND PACKET
                                ;       NOTE:   R3 IS IGNORED IF THE KTENABLE FLAG IS CLEAR.
                                ;-
007062                          PRIPKT::
007062                                  SAVREG                          ;SAVE THE REGISTERS
007066  010005                          MOV     R0,R5                   ;SAVE NO. OF WORDS IN PACKET
007070  005737  003102                  TST     KTENABLE                ;ABOVE 28K UNDER TEST?
007074  001001                          BNE     10$                     ;BR IF YES
007076  005003                          CLR     R3                      ;SET HIGH ORDER ADDRESS TO 0
007100  010301                  10$:    MOV     R3,R1                   ;COPY HIGH ORDER ADDRESS
007102  010400                          MOV     R4,R0                   ;GET LOWER ADDRESS
007104  006100                          ROL     R0                      ;SHIFT BIT 15 INTO C BIT
007106  006101                          ROL     R1                      ;AND INTO HIGH ORDER.
007110                                  PRINTB  #PKTADD,R1,R4           ;PRINT PACKET ADDRESS
007110  010446                          MOV     R4,-(SP)
007112  010146                          MOV     R1,-(SP)
007114  012746  007266                  MOV     #PKTADD,-(SP)
007120  012746  000003                  MOV     #3,-(SP)
007124  010600                          MOV     SP,R0
007126  104414                          TRAP    C$PNTB
007130  062706  000010                  ADD     #10,SP
007134  010300                  15$:    MOV     R3,R0                   ;GET HIGH ORDER ADDRESS
007136  001404                          BEQ     20$                     ;BR IF NOT ABOVE 28K.
007140  010401                          MOV     R4,R1                   ;GET LOW ORDER ADDRESS
007142  004737  020256                  JSR     PC,SETMAP               ;SETUP PAR6 MAPPING FOR 18 BIT ADDRESS
007146  010004                          MOV     R0,R4                   ;GET RETURNED PAR6 ADDRESS BIAS
007150  005001                  20$:    CLR     R1                      ;SAVE WORD NUMBER
007152  012402                  25$:    MOV     (R4)+,R2                ;GET PACKET CONTENTS
007154                                  PRINTB  #PKTFRM,R1,R2           ;PRINT THE DATA
007154  010246                          MOV     R2,-(SP)
007156  010146                          MOV     R1,-(SP)
007160  012746  007230                  MOV     #PKTFRM,-(SP)
007164  012746  000003                  MOV     #3,-(SP)
007170  010600                          MOV     SP,R0
007172  104414                          TRAP    C$PNTB
007174  062706  000010                  ADD     #10,SP
007200  005201                          INC     R1                      ;NEXT WORD NUMBER
007202  020105                          CMP     R1,R5                   ;DONE ALL PACKET WORDS?
007204  002762                          BLT     25$                     ;LOOP TILL ALL DONE
007206                                  PRINTB  #PKTNEW                 ;JUST A COUPLE NEW LINES
007206  012746  007323                  MOV     #PKTNEW,-(SP)
007212  012746  000001                  MOV     #1,-(SP)
007216  010600                          MOV     SP,R0
007220  104414                          TRAP    C$PNTB
007222  062706  000004                  ADD     #4,SP
007226  000207                          RTS     PC                      ;RETURN
007230    045    116    045  PKTFRM:  .ASCIZ  '%N%A Packet Word #%D1%A = %O6'
007266    045    116    045  PKTADD:  .ASCIZ  '%N%A Packet Address = %O1%O5'
007323    045    116    045  PKTNEW:  .ASCIZ  '%N%N%A '
                                        .EVEN
```

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


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

007334                          PRIBXOR::
007334                                  SAVREG                          ;SAVE THE REGISTERS
007340  010203                          MOV     R2,R3                   ;EXPECTED DATA
007342                                  XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007352  012700  177400                  MOV     #^C<377>,R0             ;BYTE MASK
007356  040001                          BIC     R0,R1                   ;SAVE LOW BYTE RECV
007360  040002                          BIC     R0,R2                   ;SAVE LOW BYTE EXPD
007362  040003                          BIC     R0,R3                   ;SAVE LOW BYTE XOR
007364                                  PRINTB  #XORBFOR,R2,R1,R3 ;PRINT THE MESSAGE
007364  010346                          MOV     R3,-(SP)
007366  010146                          MOV     R1,-(SP)
007370  010246                          MOV     R2,-(SP)
007372  012746  007416                  MOV     #XORBFOR,-(SP)
007376  012746  000004                  MOV     #4,-(SP)
007402  010600                          MOV     SP,R0
007404  104414                          TRAP    C$PNTB
007406  062706  000012                  ADD     #12,SP
007412  010300                          MOV     R3,R0                   ;R0 HAS XOR ON RETURN
007414  000207                          RTS     PC                      ;RETURN TO CALLER

007416      045     116     045 XORBFOR:        .ASCIZ  '%N%A EXPD: %O3%A RECV: %O3%A XOR: %O3'
                                        .EVEN
```

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

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

007464                  PRIXOR::
007464                          SAVREG                          ;SAVE THE REGISTERS
007470  010203                  MOV     R2,R3                   ;EXPECTED DATA
007472                          XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007502                          PRINTB  #XORFOR,R2,R1,R3 ;PRINT THE MESSAGE
007502  010346                  MOV     R3,-(SP)
007504  010146                  MOV     R1,-(SP)
007506  010246                  MOV     R2,-(SP)
007510  012746  007534          MOV     #XORFOR,-(SP)
007514  012746  000004          MOV     #4,-(SP)
007520  010600                  MOV     SP,R0
007522  104414                  TRAP    C$PNTB
007524  062706  000012          ADD     #12,SP
007530  010300                  MOV     R3,R0                   ;R0 HAS XOR ON RETURN
007532  000207                  RTS     PC                      ;RETURN TO CALLER

007534      045     116     045 XORFOR: .ASCIZ  '%N%A EXPD: %O6%A RECV: %O6%A XOR: %O6'
                                .EVEN
```

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

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

007602                          PRIEQU:
007602                                  SAVREG                          ;SAVE THE REGISTERS
007606  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
                                ;
                                ;-
007610                          PRIRAM:
007610                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
007614                                  PRINTB  #RAMFOR,R4              ;PRINT RAM ADDRESS IN ERROR
007614  010446                          MOV     R4,-(SP)
007616  012746  007640                  MOV     #RAMFOR,-(SP)
007622  012746  000002                  MOV     #2,-(SP)
007626  010600                          MOV     SP,R0
007630  104414                          TRAP    C$PNTB
007632  062706  000006                  ADD     #6,SP
007636  000207                          RTS     PC                      ;RETURN

007640      045     116     045 RAMFOR: .ASCIZ  '%N%A CONTROLLER RAM ADDRESS = %06'
                                        .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:
007702                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
007702 013700 002202                    MOV     ERRHI,R0                ;GET HIGH ADDRESSS
007706 013701 002204                    MOV     ERRLO,R1                ;GET LOW ADDRESS
007712 010102                           MOV     R1,R2                   ;COPY LOW ADDRESS
007716 006101                           ROL     R1                      ;SHIFT BIT 15 TO C BIT
007720 006100                           ROL     R0                      ;SHIFT INTO HIGH ORDER
007722                                  PRINTB  #PRIA0,R0,R2            ;PRINT MEMORY ADDRESS IN ERROR
007724 010246                           MOV     R2,-(SP)
007726 010046                           MOV     R0,-(SP)
007730 012746 007752                    MOV     #PRIA0,-(SP)
007734 012746 000003                    MOV     #3,-(SP)
007740 010600                           MOV     SP,R0
007742 104414                           TRAP    C$PNTB
007744 062706 000010                    ADD     #10,SP
007750 000207                           RTS     PC                      ;RETURN

007752   045   116   045  PRIA0:       .ASCIZ  '%N%A MEMORY ERROR ADDRESS = %01%05'
                                        .EVEN


                                        .SBTTL  PRITADD - PRINT MEMORY TEST ADDRESS
                                ;+
                                ;
                                ;PRINT MEMORY ADDRESS
                                ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
                                ;
                                ; IMPLICIT INPUTS
                                ;
                                ;       ERRHI   - HIGH ORDER ADDRESS
                                ;       ERRLO   - LOW ORDER ADDRESS
                                ;
                                ;-
                                PRITADD:
010016                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
010016 013700 002202                    MOV     ERRHI,R0                ;GET HIGH ADDRESSS
010022 013701 002204                    MOV     ERRLO,R1                ;GET LOW ADDRESS
010026 010102                           MOV     R1,R2                   ;COPY LOW ADDRESS
010032 006101                           ROL     R1                      ;SHIFT BIT 15 TO C BIT
010034 006100                           ROL     R0                      ;SHIFT INTO HIGH ORDER
010036                                  PRINTB  #PRIT0,R0,R2            ;PRINT MEMORY ADDRESS IN ERROR
010040 010246                           MOV     R2,-(SP)
010042 010046                           MOV     R0,-(SP)
010044 012746 010066                    MOV     #PRIT0,-(SP)
010050 012746 000003                    MOV     #3,-(SP)
010054 010600                           MOV     SP,R0
010056 104414                           TRAP    C$PNTB
010060 062706 000010                    ADD     #10,SP
010064 000207                           RTS     PC                      ;RETURN
010066   045   116   045  PRIT0:       .ASCIZ  '%N%A MEMORY TEST ADDRESS = %01%05'
                                        .EVEN
```

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

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

                        SPACE::
010130                          SAVREG                  ;SAVE THE GENERAL REGISTERS
010130  012737  000764  010320          MOV     #500.,SDELAY    ;SET UP DELAY
010134  012737  140010  010310          MOV     #140010,80$     ;SET UP COMMAND, SPACE FORWARD
010142  005703                          TST     R3              ;CHECK FOR DIRECTION
010144  100403                          BMI     5$              ;BR, IF REVERSE INDICATED
010146  010337  010312                  MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010152  000407                          BR      10$             ;GO DO COMMAND
010154  042703  100000          5$:     BIC     #BIT15,R3       ;CLEAR DIRECTION BIT
010160  010337  010312                  MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010164  052737  000400  010310          BIS     #BIT8,80$       ;SET REVERSE BIT IN COMMAND PACKET
010172  012704  010310          10$:    MOV     #80$,R4         ;SET UP R4 WITH PACKET ADDRESS
010176  010465  177776                  MOV     R4,TSDB(R5)     ;SEND OUT COMMAND
010202  004737  017110          15$:    JSR     PC,WAITF        ;WAIT FOR SSR
010206  103420                          BCS     20$             ;BR, IF SSR IS SET AND OK
010210                                  DELAY   250             ;DELAY ABOUT .25 SECONDS
010210  012727  000250                  MOV     #250.,(PC)+
010214  000000                          .WORD   0
010216  013727  002116                  MOV     LSDLY,(PC)+
010222  000000                          .WORD   0
010224  005367  177772                  DEC     -6(PC)
010230  001375                          BNE     .-4
```

```
        010240  005367  177756                DEC     -22(PC)
        010244  001367                        BNE     .-20
  1814  010246  005337  010320                DEC     SDELAY          ;BUMP DELAY COUNTER DOWN
  1815  010252  001356                        BNE     15$             ;BR, IF MORE DELAY
  1816  010254  000411                        BR      60$             ;BR IF TROUBLE CARRY = CLEAR
  1817  010256  016501  000000      20$:      MOV     TSSR(R5),R1     ;READ TSSR
  1818  010262  012702  000200                MOV     #SSR,R2         ;SET UP EXPECTED
  1819  010266  020201              25$:      CMP     R2,R1           ;ARE THEY OK
  1820  010270  001401                        BEQ     40$             ;BR, IF EQUAL = OK
  1821  010272  000402                        BR      60$             ;TROUBLE EXIT
  1822  010274  000261              40$:      SEC                     ;SET CARRY NO TROUBLE
  1823  010276  000401                        BR      70$             ;EXIT
  1824  010300  000241              60$:      CLC                     ;CARRY CLEAR = ERROR
  1825  010302                      70$:
  1826  010302  010400                        MOV     R4,R0           ;PASS PACKET ADDRESS
  1827  010304  000207                        RTS     PC              ;RETURN
```

```
                                        ;
                                        ;
                                        ;
                                        ;PACKET FOR SPACE COMMAND
                                        ;
1835 010306                                     .BLKB   10-<.-TUV2A87>
                                        ;
                                        ;COMMAND WORD
1839 010310  000000                     80$:    .WORD
                                        ;NUMBER OF RECORDS TO BE SPACED OVER WORD
1841 010312  000000                     90$:    .WORD
1842 010314  000000                             .WORD
1843 010316  000000                             .WORD
1844 010320  000000                     SDELAY: .WORD   0               ;DELAY COUNTER
1845                                            .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:
                                ;
                                ;
                                ;-

010322                          WRTCHR::
010322                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
010326  005037  002174                  CLR     BENBSW          ;CLEAR BUFFER ENABLE SWITCH
010332  010465  177776          10$:    MOV     R4,TSDB(R5)     ;SEND OUT COMMAND
010336  004737  017224                  JSR     PC,CHKTSSR      ;WAIT FOR SSR
010342  103401                          BCS     20$             ;BR, IF SSR IS SET AND OK
010344  000423                          BR      60$             ;BR IF TROUBLE CARRY = CLEAR
010346  016501  000000          20$:    MOV     TSSR(R5),R1     ;READ TSSR
010352  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
010356  032701  000100                  BIT     #OFL,R1         ;WAS OFF LINE SET IN TSSR
010362  001402                          BEQ     25$             ;BR, IF NO OFL SET
010364  052702  000100                  BIS     #OFL,R2         ;MAKE THEM LOOK ALIKE
010370  020201          25$:    CMP     R2,R1           ;ARE THEY OK
010372  001401                          BEQ     40$             ;BR, IF EQUAL = OK
010374  000407                          BR      60$             ;TROUBLE EXIT
010376  062704  000010          40$:    ADD     #8.,R4          ;POINT TO WRT CHARA DATA PACKET
010402  011403                          MOV     (R4),R3         ;GET ADDRESS OF MESSAGE BUFFER
010404  010337  002716                  MOV     R3,MESBFA       ;STORE FOR PRINT ROUTINES
010410  000261                          SEC                     ;SET CARRY NO TROUBLE
010412  000401                          BR      70$             ;EXIT
010414  000241          60$:    CLC                     ;CARRY CLEAR = ERROR
010416  016500  000000          70$:    MOV     TSSR(R5),R0     ;RETURN TSSR CONTENTS
010422  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
                                ;
                                ;
                                ;-
010424                          REWIND::
010424                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
010430  012704  010520                  MOV     #RWPACK,R4      ;GET PACKET ADDRESS
010434  010465  177776                  MOV     R4,TSDB(R5)     ;SEND PACKET ADDRESS TO EXECUTE
010440  012703  000550                  MOV     #360.,R3        ;ENOUGH TIME FOR 2400' REEL TO REWIND
010444  004737  017110          10$:    JSR     PC,WAITF        ;WAIT FOR SSR TO SET
010450  103417                          BCS     20$             ;LEAVE WHEN SSR IS SET
010452                                  DELAY   250.            ;WAIT FOR .25 SECONDS
010452  012727  000372                  MOV     #250.,(PC)+
010456  000000                          .WORD   0
010460  013727  002116                  MOV     L$DLY,(PC)+
010464  000000                          .WORD   0
010466  005367  177772                  DEC     -6(PC)
010472  001375                          BNE     .-4
010474  005367  177756                  DEC     -22(PC)
010500  001367                          BNE     .-20
010502  005303                          DEC     R3              ;BUMP COUNTER DOWN
010504  001357                          BNE     10$             ;KEEP GOING
010506  000241                          CLC                     ;CLEAR CARRY TO SET ERROR
010510  010400                  20$:    MOV     R4,R0           ;PASS THE PACKET ADDRESS
010512  000207                          RTS     PC              ;RETURN

                                        .BLKB   10-<.-TUV2A&7>
010514                          RWPACK:
010520                                  .WORD   102010          ;POSTION COMMAND (REWIND)
010520  102010                          .WORD   0               ;NOT USED
010522  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:
                                ;
                                ;
                                ;-

                                CKRAM::
                                        SAVREG                  ;SAVE THE GENERAL REGISTERS
                                        MOV     #RAMDATA,R1     ;ADDRESS TO SAVE THE RAM DATA
                                        MOV     #RMPKTBEG,R2    ;BYTE ADDRESS OF FIRST RAM DATA
                                        CLR     R3              ;CLEAR THE ERROR FLAG
                                        JSR     PC,CHKTSSR      ;WAIT FOR SSR
                                10$:    JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
                                        MOVB    R2,TSDBH(R5)    ;SELECT NEXT RAM ADDRESS
                                        JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
                                        MOVB    TSBAL(R5),(R1)  ;READ THE RAM DATA
                                        CMPB    (R1)+,(R4)+     ;COMPARE TO EXPECTED
                                        BEQ     20$             ;BRANCH IF OK
                                        INC     R3              ;SET ERROR FLAG
                                20$:    INC     R2              ;ADDRESS OF NEXT RAM LOCATION
                                        CMP     R2,#RMPKTEND    ;REACHED END YET ?
                                        BLE     10$             ;BRANCH TILL ALL READ
                                        TST     R3              ;WAS AN ERROR FOUND ?
                                        BEQ     30$             ;BRANCH IF NOT
                                        CLC                     ;CLEAR CARRY TO SHOW ERROR
                                        BR      50$             ;AND EXIT
                                30$:    SEC                     ;SHOW GOOD COMPARE
                                50$:    MOV     #8.,RAMSIZ      ;SETUP RAMSIZ FOR PRAMPKT ROUTINE
                                        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::
010626                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
010626 013705  011012                   MOV     RAMR5H,R5               ;RESET R5 TO FIRST DEVICE REGISTER
010632 012701  002206                   MOV     #RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
010636 013702  011010                   MOV     RAMHLD,R2               ;BYTE ADDRESS OF THE FIRST RAM DATA
010642 013703  002246                   MOV     RAMSIZ,R3               ;SET THE SIZE OF THE READ UP
010646 004737  017224           10$:    JSR     PC,CHKTSSR              ;WAIT FOR THE SSR TO SET
010652 110265  177777                   MOVB    R2,TSDBH(R5)            ;SELECT NEXT RAM ADDRESS
010656 004737  017224                   JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
010662 116521  177776                   MOVB    TSBAL(R5),(R1)+         ;READ THE RAM DATA
010666 062702  000001           20$:    ADD     #1,R2                   ;ADDRESS OF THE NEXT RAM LOCATION
010672 077313                           SOB     R3,10$                  ;NUMBER OF LOCATIONS COUNTER
010676 013704  002246                   MOV     RAMSIZ,R4               ;GET THE RAM SIZE
010700 013702  011010                   MOV     RAMHLD,R2               ;GET THE STARTING RAM ADDRESS
010704 060204                           ADD     R2,R4                   ;CALCULATE THE END ADDRESS
010710 162704  000001                   SUB     #1,R4                   ;CORRECT VALUE OF PRINTOUT
010712                                  PRINTX  #RAMIOP,R2,R4           ;RAM ADDRESS = 10 - 17, ETC.
010716 010446                           MOV     R4,-(SP)
010720 010246                           MOV     R2,-(SP)
010722 012746  011014                   MOV     #RAMIOP,-(SP)
010726 012746  000003                   MOV     #3,-(SP)
010732 010600                           MOV     SP,R0
010734 104415                           TRAP    C$PNTX
010736 062706  000010                   ADD     #10,SP
010742 012701  002206                   MOV     #RAMDATA,R1             ;ADDRESS OF WHERE RAM DATA IS
010746 013703  002246                   MOV     RAMSIZ,R3               ;THE SIZE OF THE RAM FIELD READ
010752 005004                   30$:    CLR     R4                      ;NO EXTRA DATA LEFT OVER
010754 112104                           MOVB    (R1)+,R4                ;PICK UP BYTE OF RAM DATA
010756 042704  177400                   BIC     #177400,R4              ;GET RID OF SIGN EXTEND
010762                                  PRINTX  #RAMPD,R4               ;"010 211 111 222 377 000 123 134 ETC."
010762 010446                           MOV     R4,-(SP)
010764 012746  011065                   MOV     #RAMPD,-(SP)
010770 012746  000002                   MOV     #2,-(SP)
010774 010600                           MOV     SP,R0
010776 104415                           TRAP    C$PNTX
011000 062706  000006                   ADD     #6,SP
011004 077316                           SOB     R3,30$                  ;LOOP UNTIL ALL PRINTED
```

```
   2051 011006  000207                  50$:    RTS     PC              ;RETURN
   2052
   2053 011010  000000                  RAMHLD: .WORD   0               ;RAM ADDR HOLDER 1ST ADDRESS
   2054 011012  000000                  RAMR5H: .WORD   0               ;HOLDS R5 FOR LATER
   2055 011014     045     116     045  RAMIOP: .ASCIZ  '%N%A Ram Address (Octal) = %03%A - %03%N'
   2056 011065     045     101     040  RAMPD:  .ASCIZ  '%A %03%A '
   2057                                         .EVEN
   2058
```

```
                                        .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:
                                ;
                                ;
                                ;-

011100                          CKRAM2::
011100                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
011104  012701  002206                  MOV     #RAMDATA,R1     ;ADDRESS TO SAVE THE RAM DATA
011110  012702  000167                  MOV     #RMCHBEG,R2     ;BYTE ADDRESS OF FIRST RAM DATA
011114  005003                          CLR     R3              ;CLEAR THE ERROR FLAG
011116  004737  017224                  JSR     PC,CHKTSSR      ;WAIT FOR SSR
011122  004737  017224          10$:    JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
011126  110265  177777                  MOVB    R2,TSDBH(R5)    ;SELECT NEXT RAM ADDRESS
011132  004737  017224                  JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
011136  116511  177776                  MOVB    TSBAL(R5),(R1)  ;READ THE RAM DATA
011142  122124                          CMPB    (R1)+,(R4)+     ;COMPARE TO EXPECTED
011144  001401                          BEQ     20$             ;BRANCH IF OK
011146  005203                          INC     R3              ;SET ERROR FLAG
011150  005202                  20$:    INC     R2              ;ADDRESS OF NEXT RAM LOCATION
011152  012737  000010  002246          MOV     #8.,RAMSIZ      ;ASSUME NORMAL NOT SET
011160  020227  000176                  CMP     R2,#RMCHEND-2   ;REACHED END YET ?
011164  003756                          BLE     10$             ;BRANCH TILL ALL READ
011166  005703                  27$:    TST     R3              ;WAS AN ERROR FOUND ?
011170  001402                          BEQ     30$             ;BRANCH IF NOT
011172  000241                          CLC                     ;CLEAR CARRY TO SHOW ERROR
011174  000401                          BR      50$             ;AND EXIT
011176  000261                  30$:    SEC                     ;SHOW GOOD COMPARE
011200  000207                  50$:    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
                                ;
                                ;-
011202                          CKMSG::
011202                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
011206  010037  002250                  MOV     R0,RCVHIADD     ;SAVE RECV HIGH ADDRESS
011212  010137  002252                  MOV     R1,RCVLOAD      ;SAVE RECV LOW ADDRESS
011216  005737  003102                  TST     KTENABLE        ;TESTING ABOVE 28K?
011222  001403                          BEQ     10$             ;BR IF NO
011224  004737  020256                  JSR     PC,SETHAP       ;RETURN ADDRESS BIASED TO PAR6 IN R0
011230  010001                          MOV     R0,R1           ;GET RETURNED ADDRESS BIASED TO PAR6
011232  005004                  10$:    CLR     R4              ;WORD IN BUFFER
011234  005003                          CLR     R3              ;CLEAR ERROR SEEN FLAG
011236  010205                          MOV     R2,R5           ;GET EXPD BUFFER ADDRESS
011240  011264  002266          15$:    MOV     (R2),EXPMSG(R4) ;SAVE EXPD FOR ERROR REPORT
011244  011164  002432                  MOV     (R1),RECMSG(R4) ;SAVE RECV FOR ERROR REPORT
011250  022221                          CMP     (R2)+,(R1)+     ;EXPD EQUAL RECV?
011252  001401                          BEQ     25$             ;BR IF YES
011254  005203                          INC     R3              ;SET ERROR SEEN FLAG
011256  062704  000002          25$:    ADD     #2,R4           ;POINT TO NEXT WORD ADDRESS
011262  020427  000014                  CMP     R4,#14          ;DONE FIRST 7 WORDS?
011266  003764                          BLE     15$             ;BR IF NO
011270  032765  000200  000012          BIT     #X2.EXTF,XST2(R5);IS EXTENDED FEATURES SET IN EXPD?
011276  001403                          BEQ     50$             ;BR IF NO
011300  020427  000016                  CMP     R4,#16          ;DONE EXTENDED FEATURES WORD?
011304  003755                          BLE     15$             ;BR IF NO
011306  005703                  50$:    TST     R3              ;ANY ERRORS SEEN?
011310  001402                          BEQ     55$             ;BR IF NO
011312  000241                          CLC                     ;SET FAILURE
011314  000401                          BR      60$             ;
011316  000261                  55$:    SEC                     ;SET SUCCESS
011320  000207                  60$:    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
                        ;
                        ;-
                        CKMSG2::
011322                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011322                          CMP     R3,#RECMSG-EXPMSG;aad IS COUNT ABOVE MAX ALLOWED?
011326  020327  000144          BLE     5$                      ;aad BR IF NO
011332  003412                  MOV     #RECMSG-EXPMSG,R3;aad
011334  012703  000144          PRINTF  #DEBUGMSG               ;aad
011340                          MOV     #DEBUGMSG,-(SP)
011340  012746  011454          MOV     #1,-(SP)
011344  012746  000001          MOV     SP,R0
011350  010600                  TRAP    C$PNTF
011352  104417                  ADD     #4,SP
011354  062706  000004
011360  010037  002250  5$:     MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011364  010137  002252          MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011370  005737  003102          TST     KTENABLE                ;TESTING ABOVE 28K?
011374  001403                  BEQ     10$                     ;BR IF NO
011376  004737  020256          JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011402  010001                  MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011404  005004          10$:    CLR     R4                      ;WORD IN BUFFER
011406  005005                  CLR     R5                      ;CLEAR ERROR SEEN FLAG
011410  111264  002266  15$:    MOVB    (R2),EXPMSG(R4)         ;SAVE EXPD FOR ERROR REPORT
011414  111164  002432          MOVB    (R1),RECMSG(R4)         ;SAVE RECV FOR ERROR REPORT
011420  122221                  CMPB    (R2)+,(R1)+             ;EXPD EQUAL RECV?
011422  001401                  BEQ     25$                     ;BR IF YES
011424  005205                  INC     R5                      ;SET ERROR SEEN FLAG
011426  062704  000001  25$:    ADD     #1,R4                   ;POINT TO NEXT BYTE
011432  020403                  CMP     R4,R3                   ;DONE ALL BYTES?
011434  002001                  BGE     50$                     ;BR IF YES
011436  000764                  BR      15$                     ;DO NEXT BYTE
011440  005705          50$:    TST     R5                      ;ANY ERRORS SEEN?
011442  001402                  BEQ     55$                     ;BR IF NO
```

```
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CKMSG2  - COMPARE EXPD RECV MESSAGE BUFFERS

   2220 011444  000241                        CLC                     ;SET FAILURE
   2221 011446  000401                        BR      60$             ;
   2222 011450  000261                55$:    SEC                     ;SET SUCCESS
   2223 011452  000207                60$:    RTS     PC              ;RETURN
   2224
   2225 011454      120      122      117  DEBUGMSG:       .ASCIZ  'PROGRAM INTERNAL ERROR -CKMSG2 MESSAGE BUFFER EXCEEDED-';@@D
   2226 011544      045      116      045  FERCM:  .ASCII  /%N%A  ***/
   2227 011555      040      040      124  ERCM:   .ASCIZ  /  TSSR ERROR CODE REC'D = /
   2228 011610      056      056      056  SIMSG:  .ASCIZ  /.... AFTER DOING SOFT INIT/
   2229 011643      124      105      123  TINERR: .ASCIZ  /TEST: .../
   2230                                           .EVEN
```

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

                                                BGNMSG  SFIMSG
                                        SFIMSG::
011656  004737  005264                          JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
011662  004737  020142                          JSR     PC,CKDROP       ;DROP UNIT, IF ALLOWED
                                                ENDMSG
                                        L10003:
011666  104423                                  TRAP    C$MSG

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

                                                BGNMSG  PKTSSR
                                        PKTSSR::
011670  004737  005264                          JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
011674  012700  000004                          MOV     #4,R0           ;NO. OF WORDS IN PACKET
011700  004737  007062                          JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
011704  013700  002716                          MOV     MESBFA,R0       ;ADDRESS OF MESSAGE BUFFER
011710  005001                                  CLR     R1              ;ASSUME NO HIGH MEMORY
011712  004737  014052                          JSR     PC,PRMESS       ;PRINT THE MESSAGE BUFFER ALSO
                                                ENDMSG
                                        L10004:
011716  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::
011720  004737  005264                  JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
011724  012700  000002                  MOV     #2,R0           ;NO. OF WORDS IN GET STATUS PACKET
011730  004737  007062                  JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
                                        ENDMSG
                                L10005:
011734  104423                          TRAP    C$MSG


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

                                        BGNMSG  SFFMSG
                                SFFMSG::
011736  004737  005264                  JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
                                        ENDMSG
                                L10006:
011742  104423                          TRAP    C$MSG


                                        .SBTTL  PKTMES  - PRINT TSSR AND MESSAGE BUFFER
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT THE CONTENTS OF TSSR AND MESSAGE
                                ;BUFFER FOR ERROR REPORTS
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      CONTENTS OF TSSR
                                ;       R2      LOW ORDER MESSAGE BUFFER
                                ;       R3      HIGH ORDER MESSAGE BUFFER ADDRESS
                                ;       NOTE: R3 IS IGNORED IF KTENABLE FLAG IS CLEAR
                                ;-
                                        BGNMSG  PKTMES
                                PKTMES::
011744  004737  005264                  JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR
011750  010200                          MOV     R2,R0           ;LOW ORDER ADDRESS
011752  010301                          MOV     R3,R1           ;HIGH ORDER ADDRESS
011754  004737  014052                  JSR     PC,PRMESS       ;PRINT THE MESSAGE BUFFER
                                        ENDMSG
                                L10007:
011760  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
011762                          ADDSSR::
011762
011762  004737  010016                  JSR     PC,PRITADD      ;PRINT MEMORY TEST ADDRESS
011766  016501  000000                  MOV     TSSR(R5),R1     ;GET CURRENT TSSR
011772  004737  005264                  JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
011776                                  ENDMSG
011776                          L10010:
011776  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
012000                          MSGEXP::
012000
012000  012700  000007                  MOV     #7,R0           ;ASSUME NO EXT FEATURES
012004  004737  015412          5$:     JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012010                                  ENDMSG
012010                          L10011:
012010  104423                          TRAP    C$MSG
```

```
                                        .SBTTL  FIFEXP  - PRINT FIFO EXP/RECV DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT FIFO EXP/RECV DATA
                                ;
                                ;       R1      - BYTE COUNT
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY)
                                ;-
                                        BGNMSG  FIFEXP
012012                          FIFEXP::
                                        PRINTX  #FIF1MSG,R1     ;PRINT BYTES TRANSFERRED
012012  010146                          MOV     R1,-(SP)
012014  012746  012064                  MOV     #FIF1MSG,-(SP)
012020  012746  000002                  MOV     #2,-(SP)
012024  010600                          MOV     SP,R0
012026  104415                          TRAP    CSPNTX
012030  062706  000006                  ADD     #6,SP
012034                                  PRINTX  #FIF2MSG        ;PRINT HEADER MSG
012034  012746  012133                  MOV     #FIF2MSG,-(SP)
012040  012746  000001                  MOV     #1,-(SP)
012044  010600                          MOV     SP,R0
012046  104415                          TRAP    CSPNTX
012050  062706  000004                  ADD     #4,SP
012054  010100                          MOV     R1,R0           ;GET BYTE COUNT
012056  004737  015762                  JSR     PC,PRBYTEXP     ;PRINT FIFO BYTES IN ERROR
012062                                  ENDMSG
012062                          L10012:
012062  104423                          TRAP    CSMSG
012064  045  116  045  000     FIF1MSG:        .ASCIZ  '%N%A NUMBER OF BYTES TRANSFERRED = %D2'
012133  045  116  045  000     FIF2MSG:        .ASCIZ  '%N%A FIFO DATA BYTES IN ERROR:'
                                        .EVEN
```

```
                                        .SBTTL  MSGSTAT - PRINT STATUS HEADER AND MESSAGE BUFFERS
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
012172                                  BGNMSG  MSGSTAT
012172                          MSGSTAT::
012172  012701  012234                  MOV     #STATCOD,R1     ;ASCII ADDRESS TABLE
012176  012100                  10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
012200  001410                          BEQ     20$             ;BR IF YES
012202                                  PRINTX  R0              ;PRINT STATUS BIT NAMES
012202  010046                          MOV     R0,-(SP)
012204  012746  000001                  MOV     #1,-(SP)
012210  010600                          MOV     SP,R0
012212  104415                          TRAP    C$PNTX
012214  062706  000004                  ADD     #4,SP
012220  000766                          BR      10$             ;DO ANOTHER MSG LINE
012222  012700  000012          20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
012226  004737  015412                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012232                                  ENDMSG
012232                          L10013:
012232  104423                          TRAP    C$MSG

012234  012252  012314  012405  STATCOD:        .WORD   1$,2$,3$,4$,5$,6$,0
012252    045     116     045   1$:.ASCIZ  '%N%A Tape Bus Signals in Word #8:'
012314    045     116     045   2$:.ASCIZ  '%N%A       PARERR<15>  IEOT  <12>  IFMK  <9>  IRDY<6>  IRWD<2>'
012405    045     116     045   3$:.ASCIZ  '%N%A       IRESV2<14>  IIDENT<11>  IHER  <8>  IONL<5>  IFBY<1>'
012476    045     116     045   4$:.ASCIZ  '%N%A       IRESV1<13>  ICER  <10>  ISPEED<7>  ILDP<4>  IFPT<0>'
012567    045     116     045   5$:.ASCIZ  '%N%A Tape Bus Signals in Word #9:'
012631    045     116     045   6$:.ASCIZ  '%N%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
                                ;-
012706                                  BGNMSG  MSGLOOP
012706                          MSGLOOP::
012706  012701  012750                  MOV     #LOOPCOD,R1     ;ASCII ADDRESS TABLE
```

```
                                        10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
                                                BEQ     20$             ;BR IF YES
                                                PRINTX  R0              ;PRINT STATUS BIT NAMES
                                                MOV     R0,-(SP)
                                                MOV     #1,-(SP)
                                                MOV     SP,R0
                                                TRAP    C$PNTX
                                                ADD     #4,SP
                                                BR      10$             ;DO ANOTHER MSG LINE
                                        20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
                                                JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
                                                ENDMSG
                                        L10014:
                                                TRAP    C$MSG

                                        LOOPCOD:        .WORD   1$,2$,3$,4$,5$,6$,7$,0
                                        1$:.ASCIZ  '%N%A Tape Bus Loopback Signals in Word #8:'
                                        2$:.ASCIZ  '%N%A      PARERR<15>          IRESV2<14>          IRESV1<13>'
                                        3$:.ASCIZ  '%N%A IHISP=>IEOT<12>    IWRT=>IIDENT<11>    IREV  =>ICER  <10>'
                                        4$:.ASCIZ  '%N%A IWFM =>IFMK<09>    IEDIT=>IHER <08>    IFAD  =>ISPEED<07>'
                                        5$:.ASCIZ  '%N%A ITAD0=>IRDY<06>    ITAD1=>IONL <05>    IERASE=>ILDP  <04>'
                                        6$:.ASCIZ  '%N%A IREW =>IDBY<03>    IRWU =>IRWD <02>    IFEN  =>IFBY  <01>'
                                        7$:.ASCIZ  '%N%A IGO  =>IFPT<00>'
                                                .EVEN
```

```
                                        .SBTTL  MSGSUB - PRINT WRITE SUBSYSTEM MESSAGE BUFFER
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
                                        BGNMSG  MSGSUB
013564                          MSGSUB::
013564  012700  000012                  MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
013570  004737  015412                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
013574                                  ENDMSG
013574                          L10015:
013574  104423                          TRAP    C$MSG


                                        .SBTTL  MEMADD - PRINT MEMORY ADDRESS DATA ERROR
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       ERRHI   - MEMORY ERROR HIGH ORDER ADDRESS
                                ;       ERRLO   - MEMORY ERROR LOW ORDER ADDRESS
                                ;       EXP     - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
                                        BGNMSG  MEMADD
013576                          MEMADD::
013576  004737  007702                  JSR     PC,PRIADD       ;PRINT MEMORY ADDRESS IN ERROR
013602  013701  002176                  MOV     EXPD,R1         ;GET EXPD DATA
013606  013702  002200                  MOV     RECV,R2         ;GET RECEIVED DATA
013612  004737  007464                  JSR     PC,PRIXOR       ;PRINT EXPD/RECV
013616                                  ENDMSG
013616                          L10016:
013616  104423                          TRAP    C$MSG
```

```
                                                .SBTTL  PRAMPKT - PRINT RAM AND PACKET DATA
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                        ;WHEN THE RAM DATA DOES NOT MATCH.
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R4      POINTER TO COMMAND PACKET
                                        ;
                                        ;IMPLICIT INPUTS:
                                        ;
                                        ;       RAMDATA         DATA AS READ FROM THE RAM
                                        ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                        ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                        ;
                                        ;IMPLICIT OUTPUTS:
                                        ;
                                        ;       RAMSIZ  SET TO 0
                                        ;-
                                        PRAMPKT:
013620                                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
013620                                  5$:     MOV     #RAMDATA,R1             ;DATA FROM THE RAM
013624  012701  002206                          CLR     R2                      ;INIT BYTE NUMBER
013630  005002                          7$:     CMPB    (R1)+,(R4)+             ;COMPARE EXPECTED, RECEIVED
013632  122124                                  BNE     7$                      ;BR IF NO MATCH
013634  001000                          10$:    MOVB    -1(R1),R5               ;GET RECV RAM DATA
013636  116105  177777                          MOVB    -1(R4),R3               ;GET EXPD PACKET DATA
013642  116403  177777                          XOR     R5,R3                   ;XOR EXPD/RECV
013646                                          BIC     #177400,R3              ;LOW BYTE ONLY
013656  042703  177400                          MOVB    -1(R1),RECV             ;GET RECEIVED RAM DATA
013662  116137  177777  002200                  MOVB    -1(R4),EXPD             ;GET EXPECTED RAM DATA
013670  116437  177777  002176                  PRINTB  #RAMASC,R2,RECV,EXPD,R3
013676                                          MOV     R3,-(SP)
013676  010346                                  MOV     EXPD,-(SP)
013700  013746  002176                          MOV     RECV,-(SP)
013704  013746  002200                          MOV     R2,-(SP)
013710  010246                                  MOV     #RAMASC,-(SP)
013712  012746  013766                          MOV     #5,-(SP)
013716  012746  000005                          MOV     SP,R0
013722  010600                                  TRAP    C$PNTB
013724  104414                                  ADD     #14,SP
013726  062706  000014                  15$:    INC     R2                      ;UPDATE BYTE COUNT
013732  005202                          20$:    TST     RAMSIZ                  ;DEFAULT TO 8.?
013734  005737  002246                          BEQ     15$                     ;BR IF YES
013740  001404                                  CMP     R2,RAMSIZ               ;DONE ALL BYTES?
013742  020237  002246                          BLE     5$                      ;BR IF NO
013746  003731                                  BR      25$                     ;
013750  000403                          25$:    CLR     RAMSIZ                  ;SET DEFAULT RAMSIZ
013752  020227  000010                          RTS     PC                      ;RETURN
013756  002725                          RAMASC: .ASCIZ  '%N%A  BYTE: %D2%A RAM: %03%A Packet: %03%A XOR:%03'
013760  005037  002246                          .EVEN
013764  000207
013766    045     116     045
```

```
                                        .SBTTL  PRMESS  - PRINT CONTENTS OF MESSAGE BUFFER
                                ;+
                                ;
                                ;THIS ROUTINE PRINTS THE CONTENTS OF
                                ;THE 7 WORD MESSAGE BUFFER RETURNED BY THE
                                ;TU80.
                                ;
                                ;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
                                ;
                                ;-

014052                          PRMESS:
014052                                  SAVREG                          ;SAVE THE REGISTERS
014056  010537  011012                  MOV     R5,RAMR5H               ;SAVE DEVICE REGISTER POINTER
014062  010005                          MOV     R0,R5                   ;SAVE LOW ORDER ADDRESS
014064  005737  003102                  TST     KTENABLE                ;ADDRESS ABOVE 28K?
014070  001001                          BNE     10$                     ;BR IF YES
014072  005001                          CLR     R1                      ;SET HIGH ORDER ADDRESS TO 0
014074  010103                  10$:    MOV     R1,R3                   ;SAVE HIGH ORDER ADDRESS
014076  006100                          ROL     R0                      ;SHIFT BIT15 TO C BIT
014100  006101                          ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
014102                                  PRINTX  #PROASC,R1,R5           ;PRINT MESSAGE BUFFER ADDRESS
014102  010546                          MOV     R5,-(SP)
014104  010146                          MOV     R1,-(SP)
014106  012746  014703                  MOV     #PROASC,-(SP)
014112  012746  000003                  MOV     #3,-(SP)
014116  010600                          MOV     SP,R0
014120  104415                          TRAP    C$PNTX
014122  062706  000010                  ADD     #10,SP
014126  022715  177777                  CMP     #177777,(R5)            ;MESSAGE BUFFER FULL OF ONES
014132  001010                          BNE     15$                     ;BR IF BUFFER IS PROBABLY OKAY
014134                                  PRINTX  #MESBFN                 ;"MESSAGE BUFFER PROBABLY NOT VALID"
014134  012746  014623                  MOV     #MESBFN,-(SP)
014140  012746  000001                  MOV     #1,-(SP)
014144  010600                          MOV     SP,R0
014146  104415                          TRAP    C$PNTX
014150  062706  000004                  ADD     #4,SP
014154                          15$:    PRINTX  #PR1ASC                 ;PRINT HEADER FOR CONTENTS
014154  012746  014750                  MOV     #PR1ASC,-(SP)
014160  012746  000001                  MOV     #1,-(SP)
014164  010600                          MOV     SP,R0
014166  104415                          TRAP    C$PNTX
014170  062706  000004                  ADD     #4,SP
014174  005004                          CLR     R4                      ;NUMBER OF THE NEXT WORD
014176  010501                          MOV     R5,R1                   ;COPY LOW ORDER ADDRESS
014200  010300                          MOV     R3,R0                   ;COPY HIGH ORDER ADDRESS
014202  001403                          BEQ     20$                     ;BR IF NOT ABOVE 28K
014204  004737  020256                  JSR     PC,SETMAP               ;SETUP PAR ADDRESS IN R0
014210  010005                          MOV     R0,R5                   ;GET PAR FORMAT ADDRESS ABOVE 28K
014212                          20$:
014212                                  PRINTX  #MESHEA,(R5)+           ;PRINT "MESSAGE BUFFER HEADER ="
```

```
                014212  012546                          MOV     (R5)+,-(SP)
                014214  012746  015006                  MOV     #MESHEA,-(SP)
                014220  012746  000002                  MOV     #2,-(SP)
                014224  010600                          MOV     SP,R0
                014226  104415                          TRAP    C$PNTX
                014230  062706  000006                  ADD     #6,SP
     2583       014234                                  PRINTX  #DATAFL,(R5)+   ;PRINT "DATA FIELD LENGTH     ="
                014234  012546                          MOV     (R5)+,-(SP)
                014236  012746  015053                  MOV     #DATAFL,-(SP)
                014242  012746  000002                  MOV     #2,-(SP)
                014246  010600                          MOV     SP,R0
                014250  104415                          TRAP    C$PNTX
                014252  062706  000006                  ADD     #6,SP
     2584       014256                                  PRINTX  #RBPCRA,(R5)+   ;PRINT "RESIDUAL BYTE COUNTER ="
                014256  012546                          MOV     (R5)+,-(SP)
                014260  012746  015120                  MOV     #RBPCRA,-(SP)
                014264  012746  000002                  MOV     #2,-(SP)
                014270  010600                          MOV     SP,R0
                014272  104415                          TRAP    C$PNTX
                014274  062706  000006                  ADD     #6,SP
     2585       014300                                  PRINTX  #XSOCON,(R5)+   ;PRINT "XSTAT0 CONTENTS       ="
                014300  012546                          MOV     (R5)+,-(SP)
                014302  012746  015165                  MOV     #XSOCON,-(SP)
                014306  012746  000002                  MOV     #2,-(SP)
                014312  010600                          MOV     SP,R0
                014314  104415                          TRAP    C$PNTX
                014316  062706  000006                  ADD     #6,SP
     2586       014322                                  PRINTX  #XS1CON,(R5)+   ;PRINT "XSTAT1 CONTENTS       ="
                014322  012546                          MOV     (R5)+,-(SP)
                014324  012746  015232                  MOV     #XS1CON,-(SP)
                014330  012746  000002                  MOV     #2,-(SP)
                014334  010600                          MOV     SP,R0
                014336  104415                          TRAP    C$PNTX
                014340  062706  000006                  ADD     #6,SP
     2587       014344                                  PRINTX  #XS2CON,(R5)+   ;PRINT "XSTAT2 CONTENTS       ="
                014344  012546                          MOV     (R5)+,-(SP)
                014346  012746  015277                  MOV     #XS2CON,-(SP)
                014352  012746  000002                  MOV     #2,-(SP)
                014356  010600                          MOV     SP,R0
                014360  104415                          TRAP    C$PNTX
                014362  062706  000006                  ADD     #6,SP
     2588       014366                                  PRINTX  #XS3CON,(R5)+   ;PRINT "XSTAT3 CONTENTS       ="
                014366  012546                          MOV     (R5)+,-(SP)
                014370  012746  015344                  MOV     #XS3CON,-(SP)
                014374  012746  000002                  MOV     #2,-(SP)
                014400  010600                          MOV     SP,R0
                014402  104415                          TRAP    C$PNTX
                014404  062706  000006                  ADD     #6,SP
     2589       014410  022737  000001  002134          CMP     #1,TRANSTST     ;CHECK FOR RAM DUMP REQUIRED
     2590       014416  001402                          BEQ     40$             ;BR, IF REQUIRED
     2591       014420  000137  014530                  JMP     50$             ;JMP IF NO DUMP
     2592       014424                          40$:    PRINTX  #RAMFHR
                014424  012746  014532                  MOV     #RAMFHR,-(SP)
                014430  012746  000001                  MOV     #1,-(SP)
                014434  010600                          MOV     SP,R0
                014436  104415                          TRAP    C$PNTX
                014440  062706  000004                  ADD     #4,SP
```

```
2593 014444  012737  000010  002246          MOV     #8.,RAMSIZ      ;RAM FIELD IS 8 BYTES LONG
2594 014452  012737  000020  011010          MOV     #20,RAMHLD      ;FIELD STARTS AT 20 OCTAL (10 HEX)
2595 014460  004737  010626                  JSR     PC,RAMER        ;READ AND PRINT THEM
2596 014464  012737  000040  011010          MOV     #40,RAMHLD      ;FIELD STARTS AT 40 OCTAL (20 HEX)
2597 014472  004737  010626                  JSR     PC,RAMER        ;READ AND PRINT THEM
2598 014476  012737  000060  011010          MOV     #60,RAMHLD      ;FIELD STARTS AT 60 OCTAL (30 HEX)
2599 014504  004737  010626                  JSR     PC,RAMER        ;READ AND PRINT THEM
2600 014510  012737  000020  002246          MOV     #16.,RAMSIZ     ;RAM FIELD IS SIXTEEN BYTES LONG
2601 014516  012737  000100  011010          MOV     #100,RAMHLD     ;FIELD STARTS AT 100 OCTAL (40 HEX)
2602 014524  004737  010626                  JSR     PC,RAMER        ;READ AND PRINT THEM
2603 014530  000207                  50$:    RTS     PC              ;RETURN
2604 014532     045     116     045  RAMFHR: .ASCIZ  '%N%A ********** SPECIAL M7454 RAM MEMORY DUMP **********'
2605 014623     045     116     045  MESBFN: .ASCIZ  '%N%A MESSAGE BUFFER CONTENTS PROBABLY NOT VALID'
2606 014703     045     116     045  PROASC: .ASCIZ  '%N%A Message Buffer Address = %01%05'
2607 014750     045     116     045  PR1ASC: .ASCIZ  '%N%A Message Buffer Contents:'
2608
2609 015006     045     116     045  MESHEA: .ASCIZ  '%N%A Message Buffer Header     = %06'
2610 015053     045     116     045  DATAFL: .ASCIZ  '%N%A Data Field Length         = %06'
2611 015120     045     116     045  RBPCRA: .ASCIZ  '%N%A Residual Byte Counter     = %06'
2612 015165     045     116     045  XS0CON: .ASCIZ  '%N%A XSTAT0 Contents           = %06'
2613 015232     045     116     045  XS1CON: .ASCIZ  '%N%A XSTAT1 Contents           = %06'
2614 015277     045     116     045  XS2CON: .ASCIZ  '%N%A XSTAT2 Contents           = %06'
2615 015344     045     116     045  XS3CON: .ASCIZ  '%N%A XSTAT3 Contents           = %06'
2616                                  .EVEN
```

```
                                        .SBTTL  PRMSGEXP - PRINT EXPD/RECV MESSAGE BUFFERS
                                ;+
                                ;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
                                ;-
015412                          PRMSGEXP::
015412                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
015416  010005                          MOV     R0,R5                   ;SAVE NUMBER OF WORDS
015420  013700  002252                  MOV     RCVLOADD,R0             ;GET RECV LOW ADDRESS
015424  010004                          MOV     R0,R4                   ;COPY LOW ADDRESS
015426  013701  002250                  MOV     RCVHIADD,R1             ;GET RECV HIGH ADDRESS
015432  006100                          ROL     R0                      ;SHIFT BIT15 TO C BIT
015434  006101                          ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
015436                                  PRINTX  #PRMSG0,R1,R4           ;PRINT MESSAGE BUFFER ADDRESS
015436  010446                          MOV     R4,-(SP)
015440  010146                          MOV     R1,-(SP)
015442  012746  015572                  MOV     #PRMSG0,-(SP)
015446  012746  000003                  MOV     #3,-(SP)
015452  010600                          MOV     SP,R0
015454  104415                          TRAP    C$PNTX
015456  062706  000010                  ADD     #10,SP
015462                                  PRINTX  #PRMSG1                 ;PRINT HEADER FOR CONTENTS
015462  012746  015637                  MOV     #PRMSG1,-(SP)
015466  012746  000001                  MOV     #1,-(SP)
015472  010600                          MOV     SP,R0
015474  104415                          TRAP    C$PNTX
015476  062706  000004                  ADD     #4,SP
015502  005004                          CLR     R4                      ;NUMBER OF THE CURRENT WORD
015504  012701  002266                  MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
015510  012702  002432                  MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
015514  011100                  20$:    MOV     (R1),R0                 ;GET EXPD
015516  011203                          MOV     (R2),R3                 ;GET RECV
015520                                  XOR     R0,R3                   ;XOR EXPD/RECV
015530                                  PRINTX  #PRMSG2,R4,(R1)+,(R2)+,R3
015530  010346                          MOV     R3,-(SP)
015532  012246                          MOV     (R2)+,-(SP)
015534  012146                          MOV     (R1)+,-(SP)
015536  010446                          MOV     R4,-(SP)
015540  012746  015675                  MOV     #PRMSG2,-(SP)
015544  012746  000005                  MOV     #5,-(SP)
015550  010600                          MOV     SP,R0
015552  104415                          TRAP    C$PNTX
015554  062706  000014                  ADD     #14,SP
015560  005204                          INC     R4                      ;NUMBER OF THE NEXT
015562  020405                          CMP     R4,R5                   ;DONE ALL YET?
015564  002001                          BGE     50$                     ;BR IF YES
015566  000752                          BR      20$                     ;DO ANOTHER
015570  000207                  50$:    RTS     PC                      ;RETURN
015572    045   116   045       PRMSG0: .ASCIZ  '%N%A Message Buffer Address = %01%05'
015637    045   116   045       PRMSG1: .ASCIZ  '%N%A Message Buffer Contents:'
015675    045   116   045       PRMSG2: .ASCIZ  '%N%A   WORD #%D2%A  EXPD: %06%A  RECV: %06%A  XOR: %06'
                                        .EVEN
```

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
                                ;-
015762                          PRBYTEXP::
015762                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
015766  010005                          MOV     R0,R5                   ;SAVE NUMBER OF BYTES
015770  005037  002264                  CLR     PRMNO                   ;INIT ERROR COUNT
015774  005004                          CLR     R4                      ;NUMBER OF THE CURRENT BYTE
015776  012701  002266                  MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
016002  012702  002432                  MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
016006  111100                  20$:    MOVB    (R1),R0                 ;GET EXPD BYTE
016010  042700  177400                  BIC     #^C<377>,R0             ;CLEAR UPPER BYTE
016014  110037  016330                  MOVB    R0,PRBEXP               ;SAVE FOR ERROR REPORT
016020  111203                          MOVB    (R2),R3                 ;GET RECV BYTE
016022  042703  177400                  BIC     #^C<377>,R3             ;CLEAR UPPER BYTE
016026  110337  016332                  MOVB    R3,PRBREC               ;FOR ERROR REPORT
016032                                  XOR     R0,R3                   ;XOR EXPD/RECV
016042  122122                          CMPB    (R1)+,(R2)+             ;EXPD = RECV?
016044  001431                          BEQ     30$                     ;BR IF YES
016046  005237  002264                  INC     PRMNO                   ;UPDATE ERROR COUNT
016052  023727  002264  000010          CMP     PRMNO,#8.               ;PRINTED 8?
016060  101023                          BHI     30$                     ;BR IF YES
016062                          27$:    PRINTX  #PRBMSG,R4,PRBEXP,PRBREC,R3
016062  010346                          MOV     R3,-(SP)
016064  013746  016332                  MOV     PRBREC,-(SP)
016070  013746  016330                  MOV     PRBEXP,-(SP)
016074  010446                          MOV     R4,-(SP)
016076  012746  016176                  MOV     #PRBMSG,-(SP)
016102  012746  000005                  MOV     #5,-(SP)
016106  010600                          MOV     SP,R0
016110  104415                          TRAP    C$PNTX
016112  062706  000014                  ADD     #14,SP
016116                                  FORCEXIT        50$             ;aad
016126  000404                          BR      35$                     ;aad
016130                          30$:
016130                                  FORCERROR  27$,NOTSSR           ;aad
016140                          35$:                                    ;aad
016140  005204                          INC     R4                      ;NUMBER OF THE NEXT
016142  020405                          CMP     R4,R5                   ;DONE ALL YET?
016144  002001                          BGE     50$                     ;BR IF YES
016146  000717                          BR      20$                     ;DO ANOTHER
016150                          50$:    PRINTX  #PRBTOT,PRMNO           ;PRINT TOTAL ERROR COUNT
016150  013746  002264                  MOV     PRMNO,-(SP)
016154  012746  016263                  MOV     #PRBTOT,-(SP)
016160  012746  000002                  MOV     #2,-(SP)
016164  010600                          MOV     SP,R0
016166  104415                          TRAP    C$PNTX
```

```
        016170  062706  000006                  ADD     #6,SP
   2698 016174  000207                          RTS     PC              ;RETURN
   2699
   2700 016176     045     116     045  PRBMSG: .ASCIZ  '%N%A   BYTE #%D2%A  EXPD: %O3%A  RECV: %O3%A  XOR: %O3'
   2701 016263     045     116     045  PRBTOT: .ASCIZ  '%N%A NUMBER OF BYTES IN ERROR = %D2'
   2702                                  .EVEN
   2703 016330  000000                  PRBEXP: .WORD   0               ;EXPD
   2704 016332  000000                  PRBREC: .WORD   0               ;RECV
   2705
   2706                                  ;+
   2707                                  ;
   2708                                  ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
   2709                                  ;
   2710                                  ;INPUTS:
   2711                                  ;
   2712                                  ;       R1      RECEIVED DATA
   2713                                  ;       R2      EXPECTED DATA
   2714                                  ;
   2715                                  ;-
   2716
   2717 016334                          BGNMSG  EXPREC
        016334                          EXPREC::
   2718 016334  004737  007464                  JSR     PC,PRIXOR       ;PRINT THE DATA
   2719 016340                          ENDMSG
        016340                          L10017:
        016340  104423                          TRAP    C$MSG
   2720
   2721
```

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

016342                                                  BGNMSG  EXPBREC
016342                                  EXPBREC::
016342  004737  007334                                  JSR     PC,PRIBXOR      ;PRINT THE DATA
016346                                                  ENDMSG
016346                                  L10020:
016346  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
                                        ;-

016350                                                  BGNMSG  RAMERR
016350                                  RAMERR::
016350  004737  013620                                  JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
016354                                                  ENDMSG
016354                                  L10021:
016354  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
016356                          RAMTADD::
016356                                  JSR     PC,PRITADD      ;PRINT TEST ADDRESS
016356  004737  010016                  JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
016362  004737  013620                  ENDMSG
016366                          L10022:
016366                                  TRAP    C$MSG
016366  104423
                                
                                        .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
016370                          RAMEXP::
016370                                  BIC     #^C<377>,R1     ;SAVE EXPD RAM DATA BYTE
016370  042701  177400                  BIC     #^C<377>,R2     ;SAVE EXPD RAM DATA BYTE
016374  042702  177400                  JSR     PC,PRIRAM       ;PRINT THE RAM ADDRESS
016400  004737  007610                  JSR     PC,PRIXOR       ;PRINT THE DATA
016404  004737  007464                  ENDMSG
016410                          L10023:
016410                                  TRAP    C$MSG
016410  104423
                                
                                        .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
```

```
 2825                                   ;-
 2826
 2827 016412                                    BGNMSG  TIMEXP
      016412                            TIMEXP::
 2828 016412                                    PRINTX  #TIMSG0         ;PRINT HEADER
      016412  012746  016440                    MOV     #TIMSG0,-(SP)
      016416  012746  000001                    MOV     #1,-(SP)
      016422  010600                            MOV     SP,R0
      016424  104415                            TRAP    C$PNTX
      016426  062706  000004                    ADD     #4,SP
 2829 016432  004737  007464                    JSR     PC,PRIXOR       ;PRINT THE DATA
 2830 016436                                    ENDMSG
      016436                            L10024:
      016436  104423                            TRAP    C$MSG
 2831
 2832
 2833 016440     045     116     045  TIMSG0: .ASCIZ  '%N%A TIMER A STATUS IS IN BIT 3%N%A TIMER B STATUS IS IN BIT 2'
 2834                                   .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
016540                  BADSSR::
016540  010246          MOV     R2,-(SP)        ;SAVE DATA TRANSFERRED
016542  042702  177400  BIC     #177400,R2      ;GET JUST ONE BYTE
016546                  PRINTB  #XFERASC,R2
016546  010246          MOV     R2,-(SP)
016550  012746  016600  MOV     #XFERASC,-(SP)
016554  012746  000002  MOV     #2,-(SP)
016560  010600          MOV     SP,R0
016562  104414          TRAP    C$PNTB
016564  062706  000006  ADD     #6,SP
016570  012602          MOV     (SP)+,R2        ;RESTORE R2
016572  004737  005264  JSR     PC,PRITSSR      ;DECODE TSSR CONTENTS
016576                  ENDMSG
016576                  L10025:
016576  104423          TRAP    C$MSG
016600    045   116   045  XFERASC:        .ASCIZ  '%N%A Data Transferred = %03'
```

```
                                        .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
                                ;
                                ;-

016634                          SOFINIT::
016634                                  SAVREG                  ; SAVE THE REGISTERS
016640  012765  000000  000000          MOV     #0,TSSR(R5)     ; DO THE INIT.
016646  004737  017110                  JSR     PC,WAITF        ; WAIT FOR SSR
016652  016500  000000                  MOV     TSSR(R5),R0     ;GET THE TSSR REGISTER
016656  010004                          MOV     R0,R4           ;TSSR CONTENTS
016660  042704  176277                  BIC     #^C<HIADDR!OFL>,R4
016664  052704  002200                  BIS     #SSR!NBA,R4     ;R4 HAS EXPECTED CONTENTS
016670  020400                          CMP     R4,R0           ;ONLY EXPECTED BITS SET ?
016672  001402                          BEQ     5$              ;BRANCH IF OKAY
016674  000241                          CLC                     ;CLEAR THE CARRY FOR ERROR
016676  000401                          BR      10$             ;GO TO EXIT
016700  000261                  5$:     SEC                     ;SET THE CARRY BIT
016702  000207                  10$:    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
                        ;
                        ;-

016704                  CHKAMB:
016704                          SAVREG                  ;SAVE THE GENERAL REGISTERS
016710  010004                  MOV     R0,R4           ;CONTENTS OF TSSR
016712  032700  100000          BIT     #SC,R0          ;IS BIT 15 SET ?
016716  001004                  BNE     5$              ;BRANCH IF YES
016720  032700  174077          BIT     #^C<NBA!OFL!SSR!HIADDR>,R0      ;ANY OTHER BITS SET ?
016724  001023                  BNE     40$             ;MUST BE AN ERROR
016726  000424                  BR      45$             ;RETURN WITH SUCCESS
016730  032700  000200  5$:     BIT     #SSR,R0         ;IS READY BIT SET ?
016734  001011                  BNE     10$             ;BRANCH IF READY BIT IS SET.
016736  032700  000040          BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016742  001414                  BEQ     40$             ;ERROR IF NOT
016744  042704  177761          BIC     #^CTERCLS,R4    ;CLEAR ALL BUT TERMINATION CODE
016750  020427  000016          CMP     R4,#16          ;ALL THREE BITS MUST BE SET
016754  001007                  BNE     40$             ;ERROR IF NOT SET
016756  000410                  BR      45$             ;OK IF ALL ARE SET
016760  032700  000040  10$:    BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016764  001405                  BEQ     45$             ;ERROR IF BIT IS SET WITH SSR
016766  032700  000006          BIT     #BIT2!BIT1,R0   ;IS THIS A FUNCTION REJECT
016772  001002                  BNE     45$             ;BR, IF TSSR IS OK
016774  000241  40$:     CLC                             ;AMBIGUOUS CONTENTS
016776  000401                  BR      50$
017000  000261  45$:     SEC                             ;SHOW SUCCESS - NO AMBIGUITY
017002  000207  50$:     RTS     PC                      ;RETURN TO CALLER
```

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

                                ; BIT DEFINITIONS FOR "INTMASK" AND "INTFLAG" BYTES:
                                ;
  000200                            IOKCKIN=BIT7            ; DON'T CHECK FOR BAD INTERRUPTS -- TEST WILL.
  000001                            IOKSTP=BIT0             ; EXPECT "STOP" INTERRUPT.
                                ;
                                ;INTERRUPT MASK -- SAYS EXPECTING INTERRUPTS
017004    000                   INTMASK:        .BYTE   0
                                ;INTERRUPT FLAG -- SAYS WE GOT ONE (IF POSITIVE)
017005    000                   INTFLAG:        .BYTE   0

                                ;SAVED INTERRUPT VECTOR:
017006  000000                  INTVEC: .WORD   0
                                ;SAVE CPU PC
017010  000000                  INTCPC: .WORD   0

                                ;SUBROUTINE TO ENABLE INTERRUPTS:
017012  010046                  ENAINT: MOV     R0,-(SP)        ;SAVE R0
017014  013700  002156                  MOV     IVEC,R0         ;GET POINTER TO VECTORS
017020  012720  017056                  MOV     #INTR,(R0)+     ;SET UP INTERRUPT VECTOR
017024  012720  000340                  MOV     #PR107,(R0)+
017030  012600                          MOV     (SP)+,R0        ;RESTORE R0
017032  011646                          MOV     (SP),-(SP)
017034  012766  000000  000002          MOV     #0,2(SP)        ;SET CPU TO LEVEL 0
017042  000002                          RTI

                                ;SUBROUTINE TO DISABLE INTERRUPTS (RAISE PRIORITY TO LEVEL 7)
017044  011646                  DSBINT: MOV     (SP),-(SP)
017046  012766  000340  000002          MOV     #PR107,2(SP)
017054  000002                          RTI
```

```
                                                .SBTTL  INTR    - INTERRUPT HANDLERS

                                                BGNSRV  INTR            ;DEFINE INTERRUPT ENTRY
                                        INTR::
                                                MOV     #1,INTRECV      ;SET FLAG TO SHOW INTERRUPT RECEIVED
                                                CLRB    INTFLAG         ;CLEAR FLAG TO SAY WE GOT INTERRUPT
                                                BITB    #IOKSTP,INTMASK ;EXPECTING STOP INTERRUPT?
                                                BNE     1$              ;BR IF YES
                                                BISB    #IOKSTP,INTFLAG ;NO. SET THE ERROR FLAG.

                                        ;SAVE REGISTERS, MSG BUFFER, ETC.
                                        1$:
                                                ENDSRV
                                        L10026:
                                                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
                        ;
017110                  WAITF:: BREAK                   ; DO A SUPVSR BREAK FIRST.
017110  104422                  TRAP    C$BRK
017112  012746  010000          MOV     #10000,-(SP)    ;BIG MSEC TIMER
017116                          DELAY   1               ;DELAY 100US
017116  012727  000001          MOV     #1,(PC)+
017122  000000                  .WORD   0
017124  013727  002116          MOV     L$DLY,(PC)+
017130  000000                  .WORD   0
017132  005367  177772          DEC     -6(PC)
017136  001375                  BNE     .-4
017140  005367  177756          DEC     -22(PC)
017144  001367                  BNE     .-20
017146  016500  000000  2$:     MOV     TSSR(R5),R0     ;READ THE TSSR REGISTER
017152  105700                  TSTB    R0              ;TEST FOR READY BIT SET
                        ;
017154  100420                  BMI     3$              ; EXIT ON STOP FLAG.
017156                          DELAY   1               ; WAIT 100 USEC
017156  012727  000001          MOV     #1,(PC)+
017162  000000                  .WORD   0
017164  013727  002116          MOV     L$DLY,(PC)+
017170  000000                  .WORD   0
017172  005367  177772          DEC     -6(PC)
017176  001375                  BNE     .-4
017200  005367  177756          DEC     -22(PC)
017204  001367                  BNE     .-20
017206  005316                  DEC     (SP)            ;REDUCE DELAY COUNT
017210  001356                  BNE     2$              ;RETRY UNTIL TIMER EXPIRES
017212  000241                  CLC                     ; C = 0, CONTROLLER STILL RUNNING...
017214  000401                  BR      4$              ;...OR HUNG-UP AFTER 300 MSEC.
017216  000261          3$:     SEC                     ; C = 1, CONTROLLER IS STOPPED.
017220  005326          4$:     DEC     (SP)+           ;RESTORE STACK WITHOUT CHANGING CARRY BIT
017222  000207                  RTS     PC
```

```
                                        .SBTTL  CHKTSSR - CHECK TSSR FOR READY

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

017224                          CHKTSSR:
017224  004737  017110                  JSR     PC,WAITF        ;WAIT FOR READY
017230  103014                          BCC     20$             ;BRANCH IF TIME OUT
017232  004737  016704                  JSR     PC,CHKAMB       ;TSSR AMBIGOUS?
017236  103006                          BCC     10$             ;BR IF YES
017240  032700  100000                  BIT     #SC,R0          ;SPECIAL CONDITION SET?
017244  001405                          BEQ     15$             ;BR IF NO
017246  032700  074000                  BIT     #<SCE!BIE!RMR!NXM>,R0   ;ANY ERROR BITS SET?
017252  001402                          BEQ     15$             ;BR IF NO
017254  000241                  10$:    CLC                     ;SET FAILURE
017256  000401                          BR      20$             ;
017260  000261                  15$:    SEC                     ;SET SUCCESS
017262  000207                  20$:    RTS     PC              ;RETURN TO CALLER
```

```
                                        .SBTTL  XNXM    - CHECK FOR NONEXISTENT MEMORY
                                ;+
                                ; ROUTINE TO TEST FOR A NEXM IN THE RANGE (R1) THRU (R2).
                                ; ON RETURN, IF "C" = 1, (R1) = NEXM ADDRESS.
                                ;               "C" = 0, ALL ADDRESSES OK.
                                ;
                                ;CALL:  MOV ADR1,R1
                                ;       MOV ADR2,R2
                                ;       JSR PC,NXM
                                ;       RETURN                  ;TEST "C" AND PROCEED.
                                ;
017264  012737  017316  000004  XNXM:   MOV     #2$,@#4         ; SET BUSERR VECTOR.
017272  012737  000200  000006          MOV     #PRI04,@#6
017300  005003                          CLR     R3              ;FLAG.
017302  005711                  1$:     TST     (R1)            ;TEST THE ADDRESS(ES).
                                                                ;IF ANY TRAP, CONTINUE AT 2$.
017304  020102                          CMP     R1,R2           ;OTHERWISE, CONTINUE HERE.
017306  001407                          BEQ     3$              ;BR IF FINISHED (NO NEXM'S).
017310  062701  000002                  ADD     #2,R1           ;SET NEXT ADDRESS...
017314  000772                          BR      1$              ;...AND CONTINUE.

017316  005103                  2$:     COM     R3              ;GOT ONE, SET FLAG...
017320  012716  017326                  MOV     #3$,(SP)
017324  000002                          RTI                     ;...AND DISMISS INTERRUPT...
017326                          3$:     CLRVEC  #4              ;...AND GIVE BACK THE VECTOR.
017326  012700  000004                  MOV     #4,R0
017332  104436                          TRAP    C$CVEC
017334  005703                          TST     R3              ;DID WE CATCH ONE ??
017336  001401                          BEQ     .+4             ;NO, "C" = 0, SKIP NEXT.
017340  000261                          SEC                     ;YES, "C" = 1, (R1) = NEXM ADDR.
017342  000207                          RTS     PC



                                        .SBTTL  TSTLOOP - CHECK ITERATION COUNT
                                ;+
                                ; SUBROUTINE TO EXECUTE TEST ITERATIONS.
                                ; EXIT WITH "C" SET IF LOOPS ALLOWED AND LOOP COUNT NON-ZERO.
                                ; LOOP COUNTER IS SET BY "BEGIN.TEST" MACRO.
                                ;
                                ; CALL: LOOPTO  ARG
                                ;
017344                          TSTLOOP::
017344  005737  002136                  TST     NOITS           ; ITERATIONS INHIBITED?
017350  001006                          BNE     1$              ; YES.
017352  005737  002152                  TST     QVP             ; NO.
017356  100403                          BMI     1$              ;LOOPS DISALLOWED IN QUICK PASS.
017360  005337  002164                  DEC     LOOPCNT         ; BUMP LOOP COUNTER.
017364  001002                          BNE     2$
017366  000241                  1$:     CLC                     ;LOOP DISALLOWED, OR DONE.
017370  000401                          BR      3$
017372  000261                  2$:     SEC                     ;LOOP ENABLED.
017374  000207                  3$:     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
                                ;
                                ;-
                                ;
017376                          TSTSETUP::
017376  010046                          MOV     R0,-(SP)        ;SAVE THE TEST ID MESSAGE
017400  005037  003106                  CLR     SIFLAG          ; CLEAR "SOFT INIT" FLAG
017404  005037  017644                  CLR     ERRK            ; CLEAR LOCAL ERROR COUNTER.
017410  005037  005232                  CLR     EXTA            ; CLEAR ERROR EXTENSION FLAG.
017414  105037  017004                  CLRB    INTMASK         ; CLEAR INTERRUPT MASK (CHECK ERROR)
017420  013700  002150                  MOV     UNITN,R0        ; GET THE UNIT NUMBER,
017424  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
017426  005737  003062                  TST     NODEV           ; DID STARTUP FIND THE DEVICE?
017432  001430                          BEQ     4$              ; BR IF YES
017434  100010                          BPL     3$              ; BR IF NOT IDLE
017436  052760  160000  003130          BIS     #160000,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
017444                                  ERRDF   1,NXR,NXRERR    ; NO DEVICE HERE -- PRINT IT
017444  104455                          TRAP    C$ERDF
017446  000001                          .WORD   1
017450  003636                          .WORD   NXR
017452  005176                          .WORD   NXRERR
017454  000407                          BR      2$
017456  052760  160001  003130  3$:     BIS     #160001,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
017464                                  ERRDF   2,NOINIT        ; DEVICE NOT IDLE
017464  104455                          TRAP    C$ERDF
017466  000002                          .WORD   2
017470  004233                          .WORD   NOINIT
017472  000000                          .WORD   0
017474  012737  177777  003060  2$:     MOV     #-1,DUFLG       ; DROP THE UNIT
017502                                  DODU    UNITN
017502  013700  002150                  MOV     UNITN,R0
017506  104451                          TRAP    C$DODU
017510                                  DOCLN                   ; ABORT THE PASS
```

```
CZTUZA0 TU80 FRONT END PRT D    MACRO M1200  29-MAR-83 13:43  PAGE 58-1
TSTSETUP - PRINT TEST NAME AND INIT ERROR COUNTS

      017510  104444                          TRAP    C$DCLN
 3164 017512  000423                          BR      5$
 3165
 3166 017514                          4$:     RFLAGS  R0              ; GET THE OPERATOR FLAGS.
      017514  104421                          TRAP    C$RFLA
 3167 017516  032700  001000                  BIT     #PNT,R0         ; PRINT THE TEST NUMBERS?
 3168 017522  001412                          BEQ     1$              ; BR IF NO
 3169 017524  011600                          MOV     (SP),R0         ;GET THE ID MESSAGE
 3170 017526                                  PRINTF  #TNAM,R0        ;DISPLAY THE TEST ID
      017526  010046                          MOV     R0,-(SP)
      017530  012746  017572                  MOV     #TNAM,-(SP)
      017534  012746  000002                  MOV     #2,-(SP)
      017540  010600                          MOV     SP,R0
      017542  104417                          TRAP    C$PNTF
      017544  062706  000006                  ADD     #6,SP
 3171 017550  005237  002162          1$:     INC     TSTCNT          ; BUMP TEST COUNTER.
 3172 017554                                  SETPRI  IPRI            ;PRIORITY THAT OF DEVICE
      017554  013700  002160                  MOV     IPRI,R0
      017560  104441                          TRAP    C$SPRI
 3173 017562  005726                  5$:     TST     (SP)+           ;FIX UP THE STACK
 3174 017564  013705  002154                  MOV     CSRADDR,R5      ; ADDRESS OF TSV REGISTERS ON UNIBUS
 3175 017570  000207                          RTS     PC
 3176 017572     045     123     045  TNAM:   .ASCIZ  '%S%T%A Test'
 3177                                          .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).
                                ;
017606                          TSTEND: RFLAGS  R0
017606  104421                         TRAP    C$RFLA
017610  030027  020000                 BIT     R0,#IER
017614  001412                         BEQ     1$                      ; BR IF "IER" NOT SET.
017616                                 PRINTF  #ESUM,ERRK              ; PRINT ERROR COUNT.
017616  013746  017644                 MOV     ERRK,-(SP)
017622  012746  017646                 MOV     #ESUM,-(SP)
017626  012746  000002                 MOV     #2,-(SP)
017632  010600                         MOV     SP,R0
017634  104417                         TRAP    C$PNTF
017636  062706  000006                 ADD     #6,SP
017642  000207                 1$:     RTS     PC

017644  000000                 ERRK:   0                               ; LOCAL ERROR COUNT.
017646    045     101     040  ESUM:   .ASCIZ  /%A %D%A ERRORS/
017665    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:
                                ;-
017732  005237  017644         INCERK: INC     ERRK                    ; INCREMENT LOCAL ERROR COUNT
017736  010046                         MOV     R0,-(SP)                ; SAVE R0
017740  013700  002150                 MOV     UNITN,R0                ; GET UNIT NUMBER,
017744  006300                         ASL     R0                      ; ... AND MAKE IT A WORD OFFSET.
017746  062700  003130                 ADD     #ERTABL,R0              ; R0 GETS ADDRESS OF ERROR TABLE ENTRY.
017752  005210                         INC     (R0)                    ; INCREMENT THE DEVICE ERROR COUNT
017754  032710  007777                 BIT     #7777,(R0)              ; DID WE OVERFLOW THE FIELD?
017760  001001                         BNE     1$                      ; BR IF NO.
017762  005310                         DEC     (R0)                    ; YES -- BACK IT UP TO 7777.
017764  012600                 1$:     MOV     (SP)+,R0                ; RESTORE R0
017766  000207                         RTS     PC                      ; RETURN TO CALLER.

017770  010046                 CKEMAX: MOV     R0,-(SP)                ; SAVE R0
017772  013700  002150                 MOV     UNITN,R0                ; GET UNIT NUMBER
017776  006300                         ASL     R0                      ; ... AND MAKE IT A WORD OFFSET
020000  016000  003130                 MOV     ERTABL(R0),R0           ; GET ERROR TABLE ENTRY
020004  042700  170000                 BIC     #170000,R0              ; EXTRACT ERROR COUNT FIELD
020010  020037  002142                 CMP     R0,GERRMAX              ; IS GLOBAL LIMIT EXCEEDED FOR THIS UNIT?
020014  103004                         BHIS    1$                      ; BR IF YES
020016  023737  017644  002140         CMP     ERRK,LERRMAX            ; IS LOCAL LIMIT EXCEEDED FOR THIS TEST?
020024  103417                         BLO     2$                      ; BR IF NO
020026                          1$:     RFLAGS  R0                      ; GET OPERATOR FLAGS
020026  104421                         TRAP    C$RFLA
020030  032700  000040                 BIT     #IDU,R0                 ; IS DROPPING INHIBITED?
020034  001013                         BNE     2$                      ; BR IF YES.
020036  012737  177777  003060         MOV     #-1,DUFLG               ; NO -- DROP THE UNIT
020044                                 ERRDF   4,EMAXDU
020044  104455                         TRAP    C$ERDF
020046  000004                         .WORD   4
020050  017665                         .WORD   EMAXDU
```

```
                020052  000000                          .WORD   0
     3225       020054                                  DODU    UNITN
                020054  013700  002150                  MOV     UNITN,R0
                020060  104451                          TRAP    C$DODU
     3226       020062                                  DOCLN
                020062  104444                          TRAP    C$DCLN
     3227       020064  012600                  2$:     MOV     (SP)+,R0        ; RESTORE R0
     3228       020066  000207                          RTS     PC              ; RETURN TO CALLER
     3229                                                .SBTTL  FATCHK - INC FATAL ERRORS AND CHECK FOR LIMIT
     3230                                          ;+
     3231                                          ;
     3232                                          ;       CHECK FATAL COUNTER, AFTER INC, FOR MORE THAN 25
     3233                                          ;       ERRORS AND IF OVER CALL UNIT DROP ROUTINE
     3234                                          ;
     3235                                          ;-
     3236       020070                     FATCHK:
     3237       020070                             SAVREG                          ;BETTER SAVE THE REGISTERS
     3238       020074  013701  002150             MOV     UNITN,R1                ;PICK UP THE UNIT NUMBER
     3239       020100  006301                     ASL     R1                      ;MAKE IT INTO A BYTE OFFSET
     3240       020102  062761  000001  003130     ADD     #1,ERTABL(R1)           ;ADD 1 TO THE PROPER UNIT'S ERROR COUNTER
     3241       020110  005237  002170             INC     FATFLG                  ;BUMP FATAL ERROR COUNTER
     3242       020114  023727  002170  000031     CMP     FATFLG,#25.             ;CHECK AGAINST 25
     3243       020122  002406                     BLT     9$                      ;BR, IF LESS THAN 25 ERRORS
     3244       020124                             RFLAGS  R0                      ;READ THE FLAGS INTO R0
                020124  104421                     TRAP    C$RFLA
     3245       020126  032700  040000             BIT     #BIT14,R0               ;BR, IF LOOP ON ERROR IS SET
     3246       020132  001002                     BNE     9$                      ;OTHERWISE NEVER BE ABLE TO SCOPE ETC.
     3247       020134  004737  020142             JSR     PC,CKDROP               ;DROP UNIT IF ALLOWED
     3248       020140  000207                 9$: RTS     PC                      ;RETURN ETC.
     3249                                          ;
     3250                                          ;
     3251                                          ;
```

```
                                        .SBTTL  CKDROP  - CHECK IF UNIT SHOULD BE DROPPED
                                ;+
                                ; CHECK IF UNIT SHOULD BE DROPPED
                                ;-
020142  010046                  CKDROP: MOV     R0,-(SP)
020144                                  FORCERROR       1$,NOTSSR
020154                                  RFLAGS  R0
020154  104421                          TRAP    C$RFLA
020156  032700  000040                  BIT     #IDU,R0
020162  001010                          BNE     1$
020164  011600                          MOV     (SP),R0
020166  012737  177777  003060          MOV     #-1,DUFLG
020174                                  DODU    UNITN
020174  013700  002150                  MOV     UNITN,R0
020200  104451                          TRAP    C$DODU
020202                                  DOCLN                   ;ABORT THE PASS
020202  104444                          TRAP    C$DCLN
020204  012600                  1$:     MOV     (SP)+,R0
020206  000207                          RTS     PC


                                        .SBTTL  CONFIG  - DETERMINE CONFIGURATION OF SYSTEM
                                ;
                                ; SUBROUTINE - DETERMINE CONFIGURATION OF TU80 SYSTEM.
                                ;
020210                          CONFIG:
020210  004737  016634                  JSR     PC,SOFINIT
020214  000207                          RTS     PC
```

```
                                        .SBTTL  KTON,KTOFF      - ENABLE/DISABLE MEMORY MANAGEMENT
                                ;
                                ; SUBROUTINE - ENABLE MEM MGT.
                                ;
020216  005737  003100        KTON:   TST     KTFLG           ; GOT KT?
020222  001403                        BEQ     1$              ; NO.
020224  012737  000001  177572        MOV     #1,SR0          ; YES. ENABLE KT11.
020232  000207                1$:     RTS     PC


                                ;
                                ; SUBROUTINE - DISABLE MEM MGT.
                                ;
020234  005737  003100        KTOFF:  TST     KTFLG           ; GOT KT11?
020240  001405                        BEQ     1$              ; NO.
020242  000240                        NOP
020244  000240                        NOP
020246  012737  000000  177572        MOV     #0,SR0          ; DISABLE KT.
020254  000207                1$:     RTS     PC
```

```
                        .SBTTL  SETMAP  - SETUP PAR6 MAPPING

                ;+
                ;
                ;THIS ROUTINE SETS UP KERNEL PAR6 TP HANDLE
                ;AN 18 BIT ADDRESS. THE OFFSET INTO THE PAGE
                ;IS RETURNED BIASED TO PAR6.
                ;
                ;INPUTS:
                ;
                ;       R0      HIGH ORDER ADDRESS BITS
                ;       R1      LOW ORDER ADDRESS BITS
                ;
                ;OUTPUTS:
                ;
                ;       R0      OFFSET INTO BLOCK WITH PAR6 BIAS (I.E. THE ADDRESS)
                ;       CARRY   SET IF SUCCESS
                ;               CLR IF ERROR
                ;-
020256          SETMAP:
020256                  SAVREG                          ;SAVE R1-R4 UNTIL NEXT RETURN
020262  005737  003100          TST     KTFLG           ;SYSTEM HAVE ABOVE 28K?
020266  001433                  BEQ     10$             ;BR IF NO
020270  010102                  MOV     R1,R2           ;SAVE LOW ORDER BITS
        000006                  .REPT   6
                                ASR     R0              ;CONVERT WORD ADDRESS TO 32W BLOCKS
                                ROR     R1              ;MAKE IT DUUBLE PRECISION
                                .ENDR
020322  042701  000177          BIC     #177,R1         ;ALINE FOR LOWER 4K BOUNDARY
020326  020137  003100          CMP     R1,KTFLG        ;HIGHER THAN EXISTING MEMORY?
020332  103011                  BHIS    10$             ;BR IF YES
020334  010137  172354          MOV     R1,@#KIPAR6     ;SETUP MAPPING REGISTER PAR6
020340  042702  160000          BIC     #160000,R2      ;SETUP DISPLACEMENT IN PAGE
020344  062702  140000          ADD     #140000,R2      ;ADD IN PAR6 BIAS
020350  010200                  MOV     R2,R0           ;RETURN IN R0
020352  000261                  SEC                     ;SET SUCCESS
020354  000401                  BR      15$             ;
020356  000241          10$:    CLC                     ;SET FAILURE
020360  000207          15$:    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
                                ;-
                                ;
020362                          FILLMEM:
020362                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
020366  004737  020234                  JSR     PC,KTOFF                ;DISABLE KT.
020372  010003                          MOV     R0,R3                   ;COPY TEST PATTERN
020374  013701  003072                  MOV     FREE,R1                 ;GET FIRST FREE LOCATION
020400  013702  003074                  MOV     FRESIZ,R2               ;SIZE OF FREE SPACE BELOW 28K.
020404  010321                  10$:    MOV     R3,(R1)+                ;STORE A BACKGROUND WORD
020406  005302                          DEC     R2                      ;DONE ALL MEMORY IN FREE SPACE?
020410  003375                          BGT     10$                     ;BR IF NO
020412  005737  003100                  TST     KTFLG                   ; GOT KT?
020416  001452                          BEQ     55$                     ; NO. GET OUT.
020420  004737  020216                  JSR     PC,KTON                 ; YES. ENABLE KT.
020424  005000                          CLR     R0                      ;HIGH ORDER ADDRESS START
020426  013701  003104                  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
020476  004737  020256                  JSR     PC,SETMAP               ;SETUP PAR6 MAPPING REGISTER
020502  010320                  30$:    MOV     R3,(R0)+                ;STORE TEST PATTERN IN >28K ADDRESS
020504  020027  160000                  CMP     R0,#160000              ;END OF PAR6 MAPPING AREA?
020510  103774                          BLO     30$                     ;BR IF NO
020512  162700  020000                  SUB     #20000,R0               ;BACKUP INTO PAR6 MAPPING BEGIN
020516  062737  000200  172354          ADD     #200,@#KIPAR6           ;POINT TO NEXT 4K BLOCK >28K.
020524  023737  172354  003100          CMP     @#KIPAR6,KTFLG          ;END OF MEMORY?
020532  001402                          BEQ     50$                     ;BR IF YES
020534  000137  020502                  JMP     30$                     ;KEEP GOING ON ETC.
020540  004737  020234          50$:    JSR     PC,KTOFF                ; DISABLE KT.
020544  000207                  55$:    RTS     PC
```

```
                                        .SBTTL  CMPMEM  - COMPARE MEMORY TO BACKGROUND PATTERN
                                ;+
                                ; COMPARE MEMORY WITH A BACKGROUND PATTERN
                                ;
                                ; INPUTS:
                                ;
                                ;       R0 = BACKGROUND PATTERN
                                ;       FREE    = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
                                ;       KTFLG   = SET TO HIGHEST MEMORY LOCATION IF > 28K.
                                ;
                                ; OUTPUTS:
                                ;
                                ;       CARRY   - SET IF NO ERROR
                                ;       CARRY   - CLR IF ERROR
                                ;
                                ; IMPLICIT OUTPUTS:
                                ;
                                ;       ERRHI   - ERROR HIGH ADDRESS
                                ;       ERRLO   - ERROR LOW ADDRESS
                                ;       EXPD    - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
020546                          CMPMEM:
020546                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
020552  010003                          MOV     R0,R3           ;COPY TEST PATTERN
020554  004737  020234                  JSR     PC,KTOFF        ;DISABLE KT.
020560  013701  003072                  MOV     FREE,R1         ;GET FIRST FREE LOCATION
020564  013702  003074                  MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
020570  020311                  10$:    CMP     R3,(R1)         ;FREE SPACE LOCATION EQUAL TO EXPD?
020572  001411                          BEQ     15$             ;BR IF YES
020574  010137  002204                  MOV     R1,ERRLO        ;SAVE ADDRESS IN ERROR
020600  005037  002202                  CLR     ERRHI           ;NO HIGH ADDRESS
020604  010337  002176                  MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
020610  011137  002200                  MOV     (R1),RECV       ;SAVE RECV FOR ERROR REPORT
020614  000474                          BR      50$             ;
020616  005721                  15$:    TST     (R1)+           ;POINT TO NEXT ADDRESS
020620  005302                          DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
020622  003362                          BGT     10$             ;BR IF NO
020624  005737  003100                  TST     KTFLG           ; GOT KT?
020630  001472                          BEQ     55$             ; NO. GET OUT.
020632  004737  020216                  JSR     PC,KTON         ; YES. ENABLE KT.
020636  005000                          CLR     R0              ;HIGH ORDER ADDRESS START
020640  013701  003104                  MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
        000006                          .REPT   6
                                        ROL     R1              ;CONVERT BLOCKS TO WORDS
                                        ROL     R0              ;MAKE IT DOUBLE PRECISION
                                        .ENDR
020674  042701  000177                  BIC     #177,R1         ;ALINE 4K BOUNDARY
020700  010046                          MOV     R0,-(SP)        ;SAVE HIGH ORDER
020702  010146                          MOV     R1,-(SP)        ;SAVE LOW ORDER
020704  004737  020256                  JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
020710  010004                          MOV     R0,R4           ;COPY ADDRESS BIASED TO PAR6
020712  012601                          MOV     (SP)+,R1        ;RESTORE LOW ORDER IN NON PAR6 FORMAT
020714  012600                          MOV     (SP)+,R0        ;RESTORE HIGH ORDER IN NON PAR6 FORMAT
020716  020314                  30$:    CMP     R3,(R4)         ;ABOVE 28K LOCATION EQUAL EXPD?
020720  001411                          BEQ     32$             ;BR IF YES
020722  010037  002202                  MOV     R0,ERRHI        ;SAVE HIGH ORDER IN ERROR
```

```
3452 020726  010137  002204                    MOV     R1,ERRLO        ;SAVE LOW ORDER IN ERROR
3453 020732  010337  002176                    MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
3454 020736  011437  002200                    MOV     (R4),RECV       ;SAVE RECV FOR ERROR REPORT
3455 020742  000421                            BR      50$             ;
3456 020744  062701  000002          32$:      ADD     #2,R1           ;UPDATE NON PAR6 ADDRESS
3457 020750  005500                            ADC     R0              ;MAKE IT DOUBLE PRECISION ADD
3458 020752  062704  000002                    ADD     #2,R4           ;UPDATE PAR FORMAT ADDRESS
3459 020756  020427  160000                    CMP     R4,#160000      ;END OF PAR6 MAPPING AREA?
3460 020762  103755                            BLO     30$             ;BR IF NO
3461 020764  162704  020000                    SUB     #20000,R4       ;BACKUP INTO PAR6 MAPPING BEGIN
3462 020770  062737  000200  172354            ADD     #200,@#KIPAR6   ;POINT TO NEXT 4K BLOCK >28K.
3463 020776  023737  172354  003100            CMP     @#KIPAR6,KTFLG  ;END OF MEMORY?
3464 021004  101744                            BLOS    30$             ;BR IF NO
3465 021006  004737  020234          50$:      JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
3466 021012  000241                            CLC                     ;SET FAILURE
3467 021014  000403                            BR      60$             ;
3468 021016  004737  020234          55$:      JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
3469 021022  000261                            SEC                     ;SET SUCCESS
3470 021024  000207                  60$:      RTS     PC
3471
```

```
                                        .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
                                ;
                                ;-

021026                          REGSAV:
021026                                  BREAK                   ;LOOK FOR CNTL C
021026  104422                          TRAP    C$BRK
021030  010446                          MOV     R4,-(SP)
021032  010346                          MOV     R3,-(SP)
021034  010246                          MOV     R2,-(SP)
021036  010146                          MOV     R1,-(SP)
021040  010546                          MOV     R5,-(SP)
021042  016605  000012                  MOV     10.(SP),R5
021046  004736                          JSR     PC,@(SP)+
021050  012601                          MOV     (SP)+,R1
021052  012602                          MOV     (SP)+,R2
021054  012603                          MOV     (SP)+,R3
021056  012604                          MOV     (SP)+,R4
021060  012605                          MOV     (SP)+,R5
021062                                  BREAK                   ;LOOK FOR CNTL C
021062  104422                          TRAP    C$BRK
021064  000207                          RTS     PC
```

```
3511                                            .SBTTL  GETPAT  - GET 8 BIT PATTERN FROM OPERATOR
3512                                    ;+
3513                                    ;
3514                                    ;ROUTINE TO REQUEST AN 8 BIT DATA PATTERN FROM THE OPERATOR
3515                                    ;
3516                                    ;INPUTS:
3517                                    ;
3518                                    ;       NONE.
3519                                    ;
3520                                    ;OUTPUTS:
3521                                    ;
3522                                    ;       R0      OCTAL NUMBER FROM THE OPERATOR
3523                                    ;
3524                                    ;CALLING SEQUENCE:
3525                                    ;
3526                                    ;       JSR     PC,GETPAT
3527                                    ;
3528                                    ;-
3529
3530 021066                             GETPAT::
3531 021066                                     SAVREG                          ;SAVE THE GENERAL REGISTERS
3532 021072                             1$:     GMANID  DATASC,PATDAT,0,377,0,377,NO
     021072  104443                             TRAP    C$GMAN
     021074  000406                             BR      10000$
     021076  021122                             .WORD   PATDAT
     021100  000022                             .WORD   T$CODE
     021102  021124                             .WORD   DATASC
     021104  000377                             .WORD   377
     021106  000000                             .WORD   T$LOLIM
     021110  000377                             .WORD   T$HILIM
     021112                             10000$:
3533 021112                                     BNCOMPLETE      1$      ;RETRY IF ERROR
     021112  103367                             BCC     1$
3534 021114  013700  021122                     MOV     PATDAT,R0       ;DATA PATTERN FROM OPERATOR
3535 021120  000207                             RTS     PC              ;RETURN TO CALLER
3536
3537                                    ;+
3538                                    ;LOCAL DATA AREA
3539                                    ;-
3540
3541 021122  000000                     PATDAT: .WORD   0               ;TEMPORARY STORAGE FOR DATA
3542 021124     105     116     124     DATASC: .ASCIZ  'ENTER DATA PATTERN'
3543                                            .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
                                ;-
021150                          GETSEL::
                                        SAVREG                          ;SAVE GENERAL REGISTERS
021150                                  MOV     R0,R2                   ;SAVE THE MENU ADDRESS
021154  010002                  1$:     MOV     R2,R3                   ;START OF MENU STRING
021156  010203                  2$:     TST     (R3)                    ;END OF ASCII ?
021160  005713                          BEQ     3$                      ;BRANCH IF ALL LINES DISPLAYED
021162  001412                          PRINTF  #SELASC,(R3)+           ;DISPLAY THE MENU
021164                                  MOV     (R3)+,-(SP)
021164  012346                          MOV     #SELASC,-(SP)
021166  012746  021334                  MOV     #2,-(SP)
021172  012746  000002                  MOV     SP,R0
021176  010600                          TRAP    C$PNTF
021200  104417                          ADD     #6,SP
021202  062706  000006                  BR      2$
021206  000764                  3$:     GMANID  MENASC,MENRES,D,-1,0,-1,NO
021210                                  TRAP    C$GMAN
021210  104443                          BR      10001$
021212  000406                          .WORD   MENRES
021214  021370                          .WORD   T$CODE
021216  000042                          .WORD   MENASC
021220  021341                          .WORD   -1
021222  177777                          .WORD   T$LOLIM
021224  000000                          .WORD   T$HILIM
021226  177777                  10001$:
021230                                  BNCOMPLETE      1$      ;RETRY IF ERROR
021230  103352                          BCC     1$
021230  013700  021370                  MOV     MENRES,R0       ;GET THE OPERATOR'S REPLY
021232  020001                          CMP     R0,R1           ;COMPARE TO MAXIMUM ALLOWED
021236  101411                          BLOS    5$              ;BRANCH IF OK
021240                                  PRINTF  #MENERR         ;DISPLAY ERROR MESSAGE
021242  012746  021266                  MOV     #MENERR,-(SP)
021242  012746  000001                  MOV     #1,-(SP)
021246  010600                          MOV     SP,R0
021252  104417                          TRAP    C$PNTF
021254  062706  000004                  ADD     #4,SP
021256  000735                          BR      1$              ;RETRY
021262  000207                  5$:     RTS     PC              ;RETURN TO CALLER
021264    045   116   045   MENERR: .ASCIZ   '%N%A *** Menu Selection Too Large ***'
021266    045   116   045   SELASC: .ASCIZ   '%N%T'
021334    105   156   164   MENASC: .ASCIZ   'Enter Menu Selection: '
                                        .EVEN
021341  000000                  MENRES: .WORD   0
021370
```

```
                                        .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.
                                ;
                                ;-

021372                          CHKMAN::
                                        SAVREG                  ;SAVE THE REGISTERS
021372                                  MANUAL                  ;SEE IF MANUAL INTERVENTION OK
021376  104450                          TRAP    C$MANI
                                        BCOMPLETE 1$            ;BRANCH IF ALLOWED
021400                                  BCS     1$
021400  103411                          PRINTF  #NOMAN          ;PRINT THE WARNING MESSAGE
021402                                  MOV     #NOMAN,-(SP)
021402  012746  021426                  MOV     #1,-(SP)
021406  012746  000001                  MOV     SP,R0
021412  010600                          TRAP    C$PNTF
021414  104417                          ADD     #4,SP
021416  062706  000004                  CLC                     ;CLEAR CARRY FOR ERROR
021422  000241                  1$:     RTS     PC              ;RETURN
021424  000207
                                
021426      045     116     045 NOMAN:  .ASCIZ  '%N%A *** Manual Intervention not Allowed - Test Aborted ***'
                                        .even
```

```
                                        .SBTTL  ENVIRN  - SETUP FREE DIAGNOSTIC SPACE
                                ;
                                ; SUBROUTINE TO SET-UP VARIOUS ENVIRONMENTAL PARAMETERS.
                                ;
021522                          ENVIRN: MEMORY  R0
021522  104431                         TRAP    C$MEM
021524  010037  003072                  MOV     R0,FREE         ; GET 1ST FREE ADDRESS...
021530  062737  000002  003072          ADD     #2,FREE
021536  011037  003074                  MOV     (R0),FRESIZ     ;...AND WORD COUNT.
021542  162737  000004  003074          SUB     #4,FRESIZ
021550  013702  002012                  MOV     L$UNIT,R2       ; GET NUMBER OF UNITS
021554  162737  000007  003074  10$:    SUB     #7,FRESIZ       ; TAKE AWAY 7 WORDS PER UNIT
021562  005302                          DEC     R2
021564  001373                          BNE     10$
021566  013700  003072                  MOV     FREE,R0         ;GET FIRST FREE ADDRESS
021572  063700  003074                  ADD     FRESIZ,R0       ;POINT TO LAST FREE ADDRESS
021576  162700  000002                  SUB     #2,R0           ;BACKUP 1 WORD
021602  010037  003076                  MOV     R0,FREEHI       ;STORE LAST FREE ADDRESS
021606  000207                          RTS     PC              ;RETURN
```

```
                                        .SBTTL  KTINIT  - SETUP KT11 MEMORY MANAGEMENT REGISTERS
                                ;+
                                ;ROUTINE TO INIT KT-11
                                ;-
                                KTINIT:
021610  005037  003100          CLR     KTFLG           ; INIT >28K MEMORY FLAG
021614  005037  003102          CLR     KTENABLE        ; INIT TEST >28K FLAG
021620  023727  002120  001577  CMP     L$HIME,#1577    ; GOT ENOUGH MEMORY (>28K)?
021626  101444                  BLOS    9$              ; NO.
021630  013700  000004          MOV     @#ERRVEC,R0     ; SAVE OLD ERR VEC PTR.
021634  012737  021726  000004  MOV     #2$,@#ERRVEC    ; SET ERR VEC PTR.
021642  005737  177572          TST     @#SR0           ; GOT KT11?
021646  000240                  NOP                     ;  (TRAP IF NO).
021650  013737  002120  003100  MOV     L$HIME,KTFLG    ; YES. SET KT FLAG.
021656  042737  000177  003100  BIC     #177,KTFLG      ;
021664  010037  000004          MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
021670  005000                  CLR     R0              ; R0 = AR DATA.
021672  012701  172340          MOV     #KIPAR0,R1      ; R1 = KI REGS PTR.
021676  012761  077406  177740  1$:     MOV     #77406,-40(R1)  ; SET DESCRIPTOR REG.
021704  010021                  MOV     R0,(R1)+        ; SET KIPAR REG.
021706  062700  000200          ADD     #200,R0         ; BUMP AR DATA BY "4K".
021712  020027  002000          CMP     R0,#2000        ; AT "I/O"?
021716  001367                  BNE     1$              ; NO.
021720  012741  177600          MOV     #177600,-(R1)   ; YES. SET KTPAR7 FOR I/O.
021724  000405                  BR      9$
021726  012716  021734          2$:     MOV     #6$,(SP)        ; SET UP RETURN
021732  000002                  RTI                     ; RTI TO NEXT LOCATION
021734  010037  000004          6$:     MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
021740  000207                  9$:     RTS     PC
021742                          BGNPROT
021742                          LSPROT::
021742  177777  177777  177777          .WORD   -1, -1, -1, -1  ;NO DEVICE PROTECTION REQUIRED.
021752                          ENDPROT
```

```
                                        .SBTTL  INITIALIZE SECTION

                                ;++
                                ;THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
                                ;AT THE BEGINNING OF EACH PASS.
                                ;
                                ;IF "START" OR "RESTART", SET QUICK-PASS FLAG AND BUS-INIT.
                                ;IF "CONTINUE", NOTHING IS REQUIRED.
                                ;
                                ;--
                                ;+
                                ;INSERT TEMPORARY JUMP TO ODT
                                ;-
                                        BGNINIT
021752                          L$INIT::
                                40$:
021752  012737  005672  002146          MOV     #EPRT1,EPRTSW   ;SET UP PRIMARY MESSAGE FOR REPLACEMENT
021760  005037  003106                  CLR     SIFLAG          ;CLEAR "SOFT INIT" FLAG
021764  005037  003102                  CLR     KTENABLE        ;CLEAR TEST ABOVE 28K FLAG
021770  005037  002246                  CLR     RAMSIZ          ;CLEAR RAM SIZE FOR RAMERR ROUTINE
021774                                  READEF  #EF.CONTINUE
021774  012700  000036                  MOV     #EF.CONTINUE,R0
022000  104447                          TRAP    C$REFG
022002                                  BNCOMPLETE 1$
022002  103023                          BCC     1$
022004  023737  002150  002012          CMP     UNITN,L$UNIT    ;UNIT IN RANGE?
022012  103073                          BHIS    4$              ;BR IF NO.
022014  005737  003060                  TST     DUFLG           ;DROPPED UNIT?
022020  100475                          BMI     NXTU            ;BR IF YES
022022  013701  002150                  MOV     UNITN,R1
022026  006301                          ASL     R1
022030  005761  003130                  TST     ERTABL(R1)
022034  001521                          BEQ     SETU
022036  032761  040000  003130          BIT     #BIT14,ERTABL(R1) ;DROPPED?
022044  001063                          BNE     NXTU
022046                                  EXIT    INIT            ;DO NOTHING IF "CONTINUE".
022046  104432                          TRAP    C$EXIT
022050  000430                          .WORD   L10030-.
022052                          1$:     READEF  #EF.NEW
022052  012700  000035                  MOV     #EF.NEW,R0
022056  104447                          TRAP    C$REFG
022060                                  BNCOMPLETE NXTU         ;TAKE NEXT UNIT IF NOT NEW PASS.
022060  103055                          BCC     NXTU
022062                                  READEF  #EF.START
022062  012700  000040                  MOV     #EF.START,R0
022066  104447                          TRAP    C$REFG
022070                                  BCOMPLETE 2$
022070  103404                          BCS     2$
022072                                  READEF  #EF.RESTART
022072  012700  000037                  MOV     #EF.RESTART,R0
022076  104447                          TRAP    C$REFG
022100                                  BNCOMPLETE 31$
022100  103034                          BCC     31$
022102                          2$:                             ;1ST PASS, BUS-INIT...
022102                                  BRESET                  ;BUS RESET.
022102  104433                          TRAP    C$RESET
022104  005037  002162                  CLR     TSTCNT          ;NUMBER OF TESTS RUN IN PASS
```

INITIALIZE SECTION

```
3718 022110  005037  002170                    CLR     FATFLG          ;RESET FLAG TO ZERO "FATAL ERRORS"
3719 022114  000406                            BR      19$             ;BR, IF THE FLAG IS NOT SET
3720                                                                   ;(NO DEBUGGER ETC.)
3721 022116  012746  000340                    MOV     #340,-(SP)
3722 022122  012746  022136                    MOV     #20$,-(SP)      ;RETURN TO DEBUGGER
3723 022126  000137  064424                    JMP     O.ODT           ;;@@ENTER THE DEBUGGER
3724 022132  005037  003332            19$:    CLR     SKIPT           ;CLEAR THE SUBTEST "SKIPPER"
3725 022136                            20$:
3726 022136  012737  177777  002152            MOV     #-1,QVP         ;...QUICK VERIFY...
3727 022144  004737  021522                    JSR     PC,ENVIRN       ;SET ENVIRONMENT.
3728 022150  004737  021610                    JSR     PC,KTINIT       ;INITIALIZE KT MEMORY MANAGEMENT
3729 022154  012700  003130                    MOV     #ERTABL,R0
3730 022160  005020                    30$:    CLR     (R0)+           ;CLEAR THE ERROR TABLE
3731 022162  020027  003330                    CMP     R0,#ERTABE
3732 022166  103774                            BLO     30$
3733 022170  000404                            BR      4$
3734 022172  005037  002152            31$:    CLR     QVP
3735 022176  000137  022246                    JMP     PASRPT          ;GO REPORT THE STATUS
3736
3737 022202                            4$:
3738 022202  012737  177777  002150    NEWPAS: MOV     #-1,UNITN       ;INIT UNIT NUMBER...
3739 022210  005037  002166                    CLR     DEVCNT          ;CLEAR COUNT OF DEVICES RUNNING
3740 022214                            NXTU:   BREAK
     022214  104422                            TRAP    CSBRK
3741 022216  005237  002150                    INC     UNITN           ;...AND SET NEXT UNIT NUMBER.
3742 022222  023737  002150  002012            CMP     UNITN,LSUNIT
3743 022230  103423                            BLO     SETU
3744 022232  012737  177777  003060            MOV     #-1,DUFLG
3745 022240  000401                            BR      11$
3746 022242                                    DOCLN                   ;ABORT, NO MORE UNITS.
     022242  104444                            TRAP    CSDCLN
3747 022244  000240                    11$:    NOP
3748 022246                            PASRPT:
3749 022246  023727  002012  000001            CMP     LSUNIT,#1       ;HOW MANY UNITS SELECTED?
3750 022254  101752                            BLOS    NEWPAS          ;BR IF ONLY 1
3751 022256  005737  002166                    TST     DEVCNT          ;ARE ANY STILL RUNNING?
3752 022262  001747                            BEQ     NEWPAS          ;BR IF NO
3753 022264                                    RFLAGS  R0
     022264  104421                            TRAP    CSRFLA
3754 022266  032700  000100                    BIT     #ISR,R0         ;SHOULD WE PRINT STATISTICS
3755 022272  001343                            BNE     NEWPAS          ;BR IF NO
3756
3757 022274                                    DORPT
     022274  104424                            TRAP    CSDRPT
3758 022276  000741                            BR      NEWPAS
3759 022300                            10$:
3760
3761 022300                            SETU:   GPHARD  UNITN,R0        ;GET UNIT N P-TABLE POINTER.
     022300  013700  002150                    MOV     UNITN,R0
     022304  104442                            TRAP    CSGPHRD
3762 022306                                    BNCOMPLETE NXTU         ;BR IF UNIT NOT AVAILABLE.
     022306  103342                            BCC     NXTU
3763 022310  005037  003060                    CLR     DUFLG           ;CLEAR "DROPPED" FLAG.
3764 022314  005237  002166                    INC     DEVCNT
3765 022320  012001                            MOV     (R0)+,R1        ;GET 1ST REGISTER ADDRESS.
3766 022322  010137  002154                    MOV     R1,CSRADDR      ;ADDRESS OF REGISTERS OF UNIT UNDER TEST
3767
```

```
                                                MOV     (R0)+,R1        ;GET VECTOR ADDRESS.
                                                MOV     (R0),R2         ;GET INTERRUPT PRIORITY
                                                MOV     R2,IPRI         ;SET INTERRUPT PRIORITY.
                                                MOV     R1,IVEC         ;SET INTERRUPT VECTOR POINTER...
                                                MOV     #INTR,(R1)+     ;...VECTOR...
                                                MOV     R2,(R1)+        ;...AND PRIORITY.

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

                                        ;
                                        ;1ST PASS, CHECK THAT DEVICE ADDRESSES ARE VALID, AND
                                        ;THAT THE DISPLAY STATUS IS PROPERLY INITIALIZED.
                                        ;
                                                MOV     UNITN,R1
                                                ASL     R1
                                                BIS     #BIT15,ERTABL(R1) ;SAY DEVICE RUNNING
                                                CLR     EXTA            ;CLEAR ERROR EXTENSION FLAG.
                                                CMP     LSUNIT,#1       ;ARE WE TESTING MULTIPLE UNITS?
                                                BLOS    10$             ;BR IF NO.
                                                RFLAGS  R0              ;YES -- GET OPERATOR FLAGS.
                                                TRAP    C$RFLA
                                                BIT     #PNT,R0         ;SHOULD WE PRINT UNIT #?
                                                BEQ     10$             ;BR IF NOT.
                                                PRINTF  #PUNIT,UNITN    ;PRINT THE UNIT #
                                                MOV     UNITN,-(SP)
                                                MOV     #PUNIT,-(SP)
                                                MOV     #2,-(SP)
                                                MOV     SP,R0
                                                TRAP    C$PNTF
                                                ADD     #6,SP
                                        10$:
                                                CLR     NODEV
                                                MOV     CSRADDR,R1      ;ADDRESS OF FIRST REGISTER
                                                MOV     R1,R2           ;START OF REGISTERS
                                                ADD     #TSSR,R2        ;ADDRESS OF TSSR REGISTER
                                                JSR     PC,XNXM         ;TEST BOTH CONTROLLER REGISTERS...
                                                BCC     2$              ;...AND BR IF ALL OK.
                                                MOV     R1,NODEV        ;FLAG DEVICE AS NON-EXISTENT
                                                MOV     #-1,DUFLG       ;DROP THIS UNIT.
                                        2$:
                                        ;
                                        ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
                                        ;
                                        5$:     SETPRI  #PRI00          ;ENABLE INTERRUPTS.
                                                MOV     #PRI00,R0
                                                TRAP    C$SPRI
                                                ENDINIT
                                        L10030:
                                                TRAP    C$INIT

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

```
                                        .SBTTL  ADD AND DROP UNITS SECTIONS

                                ;++
                                ; THE ADD-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
                                ; TO BE (A) ADDED TO THE TEST LIST FOR THE FIRST TIME,
                                ;    OR (B) RE-INSERTED IF IT HAD BEEN PREVIOUSLY DROPPED.
                                ;--
022550                                  BGNAU
022550                          L$AU::
022550 010001                           MOV     R0,R1           ; GET UNIT TO BE ADDED (R0)
022552 006301                           ASL     R1              ; MAKE IT A WORD INDEX
022554 052761 100000 003130             BIS     #100000,ERTABL(R1) ; SET THE "ACTIVE" BIT
022562 042761 040000 003130             BIC     #40000,ERTABL(R1)  ; CLEAR THE "DROPPED" BIT
022570                                  PRINTF  #1$,R0
022570 010046                           MOV     R0,-(SP)
022572 012746 022616                    MOV     #1$,-(SP)
022576 012746 000002                    MOV     #2,-(SP)
022602 010600                           MOV     SP,R0
022604 104417                           TRAP    C$PNTF
022606 062706 000006                    ADD     #6,SP
022612                                  EXIT    AU
022612 000167                           .WORD   J$JMP
022614 000026                           .WORD   L10031-2-.
022616    045    116    045    1$:     .ASCIZ  /%N%A  UNIT %D%A ADDED/
                                        .EVEN

                                        ENDAU                   ; UNUSED.
022644                          L10031:
022644 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.

022646                                  BGNDU
022646                          L$DU::
022646 012737 177777 003060             MOV     #-1,DUFLG
022654 010001                           MOV     R0,R1
022656 006301                           ASL     R1
022660 052761 140000 003130             BIS     #140000,ERTABL(R1)      ; SAY DROPPED
022666 000240 000240 000240             240,240,240                     ; ?????????
022674                                  PRINTF  #1$,R0
022674 010046                           MOV     R0,-(SP)
022676 012746 022722                    MOV     #1$,-(SP)
022702 012746 000002                    MOV     #2,-(SP)
022706 010600                           MOV     SP,R0
022710 104417                           TRAP    C$PNTF
022712 062706 000006                    ADD     #6,SP
022716                                  EXIT    DU
022716 000167                           .WORD   J$JMP
022720 000030                           .WORD   L10032-2-.
```

```
3849 022722     045     116     045 1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
3850                                         .EVEN
3851 022752                                  ENDDU
     022752                         L10032:
     022752 104453                         TRAP    C$DU
3852                                 :++
3853                                 ; AUTO-DROP CODE SECTION.
3854                                 :--
3855 022754                                  BGNAUTO
     022754                         L$AUTO::
3856 022754 012703 000550                    MOV     #360.,R3        ;ENOUGH TIME FOR 2400' REEL TO REWIND
3857 022760 004737 017110           10$:     JSR     PC,WAITF        ;WAIT FOR SSR TO SET
3858 022764 103420                           BCS     20$             ;LEAVE WHEN SSR IS SET
3859 022766                                  DELAY   250.            ;WAIT FOR .25 SECONDS
     022766 012727 000372                    MOV     #250.,(PC)+
     022772 000000                           .WORD   0
     022774 013727 002116                    MOV     L$DLY,(PC)+
     023000 000000                           .WORD   0
     023002 005367 177772                    DEC     -6(PC)
     023006 001375                           BNE     .-4
     023010 005367 177756                    DEC     -22(PC)
     023014 001367                           BNE     .-20
3860 023016 005303                           DEC     R3              ;BUMP COUNTER DOWN
3861 023020 001357                           BNE     10$             ;KEEP GOING
3862 023022 004737 020142                    JSR     PC,CKDROP       ;TRY AND DROP UNIT
3863 023026                         20$:
3864 023026                                  ENDAUTO                 ; UNUSED.
     023026                         L10033:
     023026 104461                         TRAP    C$AUTO
```

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

                                ;++
                                ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS
                                ; EXECUTED AT THE END OF EACH PASS (OR SUB-PASS).
                                ; USE TO RETURN DEVICE UNDER TEST TO A NEUTRAL STATE.
                                ;--
023030                                  BGNCLN
023030                          L$CLEAN::
023030  005737  003060                   TST     DUFLG           ;"DROPPED" FLAG IS SET ON...
023034  100405                          BMI     1$              ;...AND GROSS CONTROLLER FAULT...
                                                                ;...DON'T TRY TO XCT CLEANUP CODE.

023036  012765  000000  000000          MOV     #0,TSSR(R5)     ;DO SOFT INIT
023044  004737  017110                   JSR     PC,WAITF
023050                          1$:
023050                          2$:     ENDCLN
023050                          L10034:
023050  104412                          TRAP    C$CLEAN
                                ;++
                                ; THE REPORT CODING SECTION CONTAINS THE
                                ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
                                ;--
023052                                  BGNRPT
023052                          L$RPT::
023052                                  PRINTS  #DEVSUM
023052  012746  023314                   MOV     #DEVSUM,-(SP)
023056  012746  000001                   MOV     #1,-(SP)
023062  010600                          MOV     SP,R0
023064  104416                          TRAP    C$PNTS
023066  062706  000004                   ADD     #4,SP
023072  010246                          MOV     R2,-(SP)
023074  010346                          MOV     R3,-(SP)
023076  010446                          MOV     R4,-(SP)
023100  012704  003130                   MOV     #ERTABL,R4      ; GET START OF ERROR TABLE.
023104  005003                          CLR     R3              ; CLEAR UNIT NUMBER
023106  011402                  1$:     MOV     (R4),R2         ; GET ERROR TABLE ENTRY & TEST IT.
023110  001467                          BEQ     4$              ; ZERO IF UNIT NOT RUN
023112  100066                          BPL     4$
023114  032702  040000                   BIT     #BIT14,R2       ; WAS UNIT DROPPED?
023120  001015                          BNE     2$              ; BR IF YES
023122  042702  170000                   BIC     #^C7777,R2      ; GET ERROR COUNT FIELD
023126                                  PRINTS  #DEVONL,R3,R2   ; PRINT
023126  010246                          MOV     R2,-(SP)
023130  010346                          MOV     R3,-(SP)
023132  012746  023351                   MOV     #DEVONL,-(SP)
023136  012746  000003                   MOV     #3,-(SP)
023142  010600                          MOV     SP,R0
023144  104416                          TRAP    C$PNTS
023146  062706  000010                   ADD     #10,SP
023152  000446                          BR      4$
023154  020227  160000           2$:     CMP     R2,#160000      ; WAS UNIT NON-EXISTENT?
023160  001012                          BNE     3$              ; BR IF NO
023162                                  PRINTS  #DEVNXR,R3
023162  010346                          MOV     R3,-(SP)
023164  012746  023421                   MOV     #DEVNXR,-(SP)
023170  012746  000002                   MOV     #2,-(SP)
```

```
                023174  010600                          MOV     SP,R0
                023176  104416                          TRAP    C$PNTS
                023200  062706  000006                  ADD     #6,SP
     3904       023204  000431                          BR      4$
     3905       023206  020227  160001          3$:     CMP     R2,#160001      ; WAS UNIT NOT READY AT STARTUP?
     3906       023212  001012                          BNE     30$             ; BR IF NO.
     3907       023214                                  PRINTS  #DEVNRD,R3
                023214  010346                          MOV     R3,-(SP)
                023216  012746  023503                  MOV     #DEVNRD,-(SP)
                023222  012746  000002                  MOV     #2,-(SP)
                023226  010600                          MOV     SP,R0
                023230  104416                          TRAP    C$PNTS
                023232  062706  000006                  ADD     #6,SP
     3908       023236  000414                          BR      4$
     3909       023240  042702  170000          30$:    BIC     #^C7777,R2
     3910       023244                                  PRINTS  #DEVDRO,R3,R2
                023244  010246                          MOV     R2,-(SP)
                023246  010346                          MOV     R3,-(SP)
                023250  012746  023564                  MOV     #DEVDRO,-(SP)
                023254  012746  000003                  MOV     #3,-(SP)
                023260  010600                          MOV     SP,R0
                023262  104416                          TRAP    C$PNTS
                023264  062706  000010                  ADD     #10,SP
     3911       023270  062704  000002          4$:     ADD     #2,R4
     3912       023274  005203                          INC     R3
     3913       023276  020427  003330                  CMP     R4,#ERTABE
     3914       023302  103701                          BLO     1$
     3915       023304  012604                          MOV     (SP)+,R4
     3916       023306  012603                          MOV     (SP)+,R3
     3917       023310  012602                          MOV     (SP)+,R2
     3918       023312                                  ENDRPT                  ; UNUSED.
                023312                          L10035:
                023312  104425                          TRAP    C$RPT
     3919       023314     045     116     045  DEVSUM: .ASCIZ  /%N%ADEVICE STATUS SUMMARY:%N/
     3920       023351     045     101     040  DEVONL: .ASCIZ  /%A  UNIT %D3%A   ONLINE,  ERRORS = %D%N/
     3921       023421     045     101     040  DEVNXR: .ASCIZ  /%A  UNIT %D3%A   DROPPED, NON-EXISTENT REGISTER%N/
     3922       023503     045     101     040  DEVNRD: .ASCIZ  /%A  UNIT %D3%A   DROPPED, NOT READY AT STARTUP%N/
     3923       023564     045     101     040  DEVDRO: .ASCIZ  /%A  UNIT %D3%A   DROPPED, ERRORS = %D%N/
     3924                                          .EVEN
```

```
                                        .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
                                ;
                                ;
                                ;
                                ;-
                                        BGNTST
023634                                                                          T1::
023634
023634  005037  002170                  CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
023640  005037  003100                  CLR     KTFLG           ;HOLD OFF KT11
023644  012737  005672  002146          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
023652  012700  032101                  MOV     #TST29ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
023656  004737  017376                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
023662  012737  000002  002164          MOV     #2,LOOPCNT              ;PERFORM 2 ITERATIONS
023670  005037  026534                  CLR     T29CNT                  ;CLEAR TAPE RECORD COUNTER
023674                          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.
                                        ;
                                        ;
                                        ;
                                        ;-
3983 023674                                     BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     023674                                                                             T1.1:
     023674  104402                                                                        TRAP    C$BSUB
3984 023676  004737  032130                     JSR     PC,T29REST              ;SET COMMAND PACKET
3985 023702  004737  032222                     JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
3986 023706  004737  032264                     JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
3987 023712  012737  023420  026540             MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
3988 023720  004737  016634           10$:      JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
3989 023724  103426                             BCS     20$                     ;BR IF INIT WAS OK
3990 023726                                     DELAY   250                     ;DELAY ABOUT .25 SECONDS
     023726  012727  000250                                                          MOV     #250,(PC)+
     023732  000000                                                                   .WORD   0
     023734  013727  002116                                                          MOV     L$DLY,(PC)+
     023740  000000                                                                   .WORD   0
     023742  005367  177772                                                          DEC     -6(PC)
     023746  001375                                                                   BNE     .-4
     023750  005367  177756                                                          DEC     -22(PC)
     023754  001367                                                                   BNE     .-20
3991 023756  005337  026540                     DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
3992 023762  001356                             BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
3993 023764  004737  020070                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
3997 023770  010001                             MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
3998 023772                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     023772  104455                                                                    TRAP    C$ERDF
     023774  000145                                                                   .WORD   101
     023776  003550                                                                   .WORD   SFIERR
     024000  011656                                                                   .WORD   SFIMSG
3999 024002                             20$:
4000
4001 024002  012704  026350                     MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4002 024006  004737  010322                     JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4003 024012  103407                             BCS     25$                     ;BR, IF COMMAND ISSUED OK
4004 024014  004737  020070                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4008 024020  010001                             MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4009 024022                                     ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     024022  104456                                                                    TRAP    C$ERHRD
     024024  000146                                                                   .WORD   102
     024026  004754                                                                   .WORD   WRTMSG
     024030  011656                                                                   .WORD   SFIMSG
4010 024032                             25$:    CKLOOP                          ;LOOP IF SELECTED
     024032  104406                                                                    TRAP    C$CLP1
4011 024034  016501  000000                     MOV     TSSR(R5),R1             ;GET THE TSSR
4012 024040  010102                             MOV     R1,R2                   ;SET UP EXPECTED
4013 024042  042702  000100                     BIC     #OFL,R2                 ;OFF LINE SHOULD NOT BE SET
4014 024046  020102                             CMP     R1,R2                   ;THEY SHOULD BE EQUAL
4015 024050  001406                             BEQ     26$                     ;BR, IF OFL IS NOT SET
```

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CZTUZA0 TU80 FRONT END PRT D    MACRO M1200  29-MAR-83 13:43  PAGE 77-1
TEST  1: WRITE TAPE MARK RETRY

4019 024052                             ERRDF   ERRNO,T290FL,EXPREC     ;DRIVE IS OFF LINE
     024052  104455                                                                TRAP    C$ERDF
     024054  000147                                                                .WORD   103
     024056  026542                                                                .WORD   T290FL
     024060  016334                                                                .WORD   EXPREC
4020 024062  004737  020142            JSR     PC,CKDROP               ;TRY AND DROP DRIVE
4021 024066  004737  010424     26$:   JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4022 024072  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR
4023 024076  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
4024 024102  103407                    BCS     30$                     ;BR, IF NO PROBLEM
4025 024104  010004                    MOV     R0,R4                   ;PACKET ADDRESS SET UP
4026 024106  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4030 024112                             ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
     024112  104456                                                                TRAP    C$ERHRD
     024114  000150                                                                .WORD   104
     024116  030260                                                                .WORD   T29RWN
     024120  011670                                                                .WORD   PKTSSR
4031 024122                     30$:    CKLOOP                          ;LOOP IF SELECTED
     024122  104406                                                                TRAP    C$CLP1
4032 024124  013701  026376            MOV     T29BFR+6,R1             ;PICK UP XSTO
4033 024130  010102                    MOV     R1,R2                   ;SET UP EXPECTED
4034 024132  052702  000002            BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4035 024136  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
4036 024140  001406                    BEQ     40$                     ;BR, IF EQUAL (OK)
4037 024142  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4041 024146                             ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     024146  104456                                                                TRAP    C$ERHRD
     024150  000151                                                                .WORD   105
     024152  027751                                                                .WORD   T29BOT
     024154  016334                                                                .WORD   EXPREC
4042 024156                     40$:    CKLOOP                          ;LOOP IF SELECTED
     024156  104406                                                                TRAP    C$CLP1
4043 024160  013737  003072  026502    MOV     FREE,T29RB              ;ADDRESS OF READ BUFFER
4044 024166  012737  141011  026500    MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,CVC=1,ACK COMMAND
4045 024174  012704  026500            MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4046 024200  010465  177776            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4047 024204  004737  017110            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4048 024210  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4049 024214  012702  100206            MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
4050 024220  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
4051 024222  001406                    BEQ     75$                     ;BR, IF OK
4052 024224  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4056 024230                             ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     024230  104456                                                                TRAP    C$ERHRD
     024232  000152                                                                .WORD   106
     024234  027622                                                                .WORD   T29WDE
     024236  011670                                                                .WORD   PKTSSR
4057 024240                     75$:    CKLOOP                          ;LOOP IF SELECTED
     024240  104406                                                                TRAP    C$CLP1
4058 024242  013701  026376            MOV     T29BFR+6,R1             ;GET XSTO STATUS WORD
4059 024246  010102                    MOV     R1,R2                   ;SET UP EXPECTED
4060 024250  052702  002000            BIS     #BIT10,R2               ;SET THE NEF BIT
4061 024254  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
4062 024256  001406                    BEQ     170$                    ;BR, IF EQUAL (GOOD)
4063 024260  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4067 024264                             ERRHRD  ERRNO,T29NEF,EXPREC     ;NEF SHOULD BE SET
     024264  104456                                                                TRAP    C$ERHRD
```

```
                                                                                .WORD   107
                                                                                .WORD   T29NEF
                                                                                .WORD   EXPREC
4068 024274                         170$:
4069 024274  005103                         COM     R3              ;RESET THE SWITCH
4070 024276  001273                         BNE     26$             ;BR, IF FIRST TIME THROUGH HERE
4071 024300                                 ENDSUB
     024300                                                         L10037:
     024300  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.
                                        ;
                                        ;
                                        ;-
024302                                          BGNSUB                                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                                T1.2:
024302                                                                                          TRAP    C$BSUB
024302  104402
024304  004737  032130                        JSR     PC,T29REST                      ;SET COMMAND PACKET
024310  004737  032222                        JSR     PC,T29RT2                       ;SET UP OTHER COMMAND PACKET
024314  004737  032264                        JSR     PC,T29RT3                       ;SET UP OTHER COMMAND PACKET
024320  004737  016634                        JSR     PC,SOFINIT                      ;DO INITIALIZE ON CONTROLLER
024324  103407                              BCS     20$                             ;BR IF INIT WAS OK
024326  004737  020070                        JSR     PC,FATCHK                       ;INC AND CHECK FOR MORE THAN 25 ERRORS
024332  010001                              MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
024334                                      ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
024334  104455                                                                          TRAP    C$ERDF
024336  000154                                                                          .WORD   108
024340  003550                                                                          .WORD   SFIERR
024342  011656                                                                          .WORD   SFIMSG
024344                                  20$:
                                        ;
024344  012704  026350                    MOV     #T29PACKET,R4                   ;SUBROUTINE NEEDS PACKET ADDRESS
024350  004737  010322                    JSR     PC,WRTCHR                       ;ISSUE WRITE CHARACTERISTICS
024354  103407                          BCS     25$                             ;BR, IF COMMAND ISSUED OK
024356  004737  020070                    JSR     PC,FATCHK                       ;INC AND CHECK FOR MORE THAN 25 ERRORS
024362  010001                          MOV     R0,R1                           ;SAVE CONTENTS OF TSSR
024364                                  ERRHRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
024364  104456                                                                          TRAP    C$ERHRD
024366  000155                                                                          .WORD   109
024370  004754                                                                          .WORD   WRTMSG
024372  011656                                                                          .WORD   SFIMSG
024374                                  25$:    CKLOOP                          ;LOOP IF SELECTED
024374  104406                                                                          TRAP    C$CLP1
024376  004737  010424                26$:    JSR     PC,REWIND                       ;CALL TAPE REWIND COMMAND
024402  016501  000000                        MOV     TSSR(R5),R1                     ;GET TSSR
024406  012702  000200                        MOV     #SSR,R2                         ;SET UP EXPECTED TSSR
024412  103407                              BCS     30$                             ;BR, IF NO PROBLEM
024414  010004                              MOV     R0,R4                           ;PACKET ADDRESS SET UP
024416  004737  020070                        JSR     PC,FATCHK                       ;INC AND CHECK FOR MORE THAN 25 ERRORS
024422                                      ERRHRD  ERRNO,T29RWN,PKTSSR             ;REWIND NOT ACCEPTED
024422  104456                                                                          TRAP    C$ERHRD
024424  000156                                                                          .WORD   110
024426  030260                                                                          .WORD   T29RWN
024430  011670                                                                          .WORD   PKTSSR
024432                                  30$:    CKLOOP                          ;LOOP IF SELECTED
024432  104406                                                                          TRAP    C$CLP1
024434  013701  026376                        MOV     T29BFR+6,R1                     ;PICK UP XST0
024440  010102                              MOV     R1,R2                           ;SET UP EXPECTED
024442  052702  000002                        BIS     #BIT1,R2                        ;SET BOT BIT IN EXPECTED
```

```
4123 024446  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
4124 024450  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
4125 024452  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4129 024456                                ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     024456  104456                                                                TRAP    C$ERHRD
     024460  000157                                                                .WORD   111
     024462  027751                                                                .WORD   T29BOT
     024464  016334                                                                .WORD   EXPREC
4130 024466  012737  000001  026502  40$:    MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
4131 024474  012737  000400  026506          MOV     #256.,T29SZ             ;SET UP RECORD SIZE
4132 024502  012737  140005  026500          MOV     #140005,T29PK3          ;WRITE FORWARD,CVC=1,ACK COMMAND
4133 024510  012704  026500                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4134 024514  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4135 024520  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4136 024524  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4137 024530  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4138 024534  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4139 024536  001406                          BEQ     75$                     ;BR, IF OK
4140 024540  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4144                                                                         ;SOFT ERROR, DON'T CARE ABOUT WRITE
4145                                                                         ;COMMAND'S RESULTS - CHECKING WRITE
4146                                                                         ;TAPE MARK COMMAND
4147 024544                                ERRSOFT ERRNO,T29WRT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     024544  104457                                                                TRAP    C$ERSOFT
     024546  000160                                                                .WORD   112
     024550  027704                                                                .WORD   T29WRT
     024552  011670                                                                .WORD   PKTSSR
4148 024554                        75$:    CKLOOP                          ;LOOP IF SELECTED
     024554  104406                                                                TRAP    C$CLP1
4149 024556  012737  000001  026502          MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
4150 024564  012737  140410  026500          MOV     #140410,T29PK3          ;SET UP COMMAND IN APCKET                       ;SET
4151 024572  012704  026500                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4152 024576  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4153 024602  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4154 024606  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4155 024612  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4156 024616  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4157 024620  001406                          BEQ     175$                    ;BR, IF OK
4158 024622  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4162 024626                                ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     024626  104456                                                                TRAP    C$ERHRD
     024630  000161                                                                .WORD   113
     024632  027622                                                                .WORD   T29WDE
     024634  011670                                                                .WORD   PKTSSR
4163 024636                        175$:   CKLOOP                          ;LOOP IF SELECTED
     024636  104406                                                                TRAP    C$CLP1
4164 024640  013737  003072  026502          MOV     FREE,T29RB              ;ADDRESS OF BUFFER
4165 024646  012737  141011  026500          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMD.
4166 024654  012704  026500                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4167 024660  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4168 024664  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4169 024670  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4170 024674  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
4171 024700  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4172 024702  001406                          BEQ     180$                    ;BR, IF OK
4173 024704  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4177 024710                                ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
```

```
                                                                                    TRAP    C$ERHRD
        024710  104456                                                              .WORD   114
        024712  000162                                                              .WORD   T29WDE
        024714  027622                                                              .WORD   PKTSSR
        024716  011670
4178    024720                          180$:   CKLOOP                      ;LOOP IF SELECTED
        024720  104406                                                              TRAP    C$CLP1
4179    024722  013701  026404                  MOV     T29BFR+14,R1        ;GET XST3 STATUS WORD
4180    024726  010102                          MOV     R1,R2               ;SET UP EXPECTED
4181    024730  052702  000001                  BIS     #BIT0,R2            ;SET THE RIB BIT
4182    024734  020102                          CMP     R1,R2               ;ARE THEY EQUAL
4183    024736  001406                          BEQ     190$                ;BR, IF EQUAL (GOOD)
4184    024740  004737  020070                  JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
4188    024744                                  ERRHRD  ERRNO,T29RIB,EXPREC ;NEF SHOULD BE SET
        024744  104456                                                              TRAP    C$ERHRD
        024746  000163                                                              .WORD   115
        024750  031706                                                              .WORD   T29RIB
        024752  016334                                                              .WORD   EXPREC
4189    024754                          190$:
4190    024754                                  ENDSUB              ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
        024754                                                              L10040:
        024754  104403                                                              TRAP    C$ESUB
```

```
4192                                    ;+
4193                                    ;
4194                                    ;TEST 1, SUBTEST 3
4195                                    ;
4196                                    ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND TERMINATES
4197                                    ;PROPERLY AND WRITES THE TAPE MARK ONTO TAPE (BY ISSUING A READ REVERSE
4198                                    ;COMMAND AND CHECKING FOR TAPE STATUS ALERT TERMINATION AND TMK=1).
4199                                    ;
4200                                    ;-
4201 024756                                     BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     024756                                                                                     T1.3:
     024756 104402                                                                                  TRAP    C$BSUB
4202 024760 004737 032130                       JSR     PC,T29REST              ;SET COMMAND PACKET
4203 024764 004737 032222                       JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
4204 024770 004737 032264                       JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
4205 024774 012737 023420 026540                MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
4206 025002 004737 016634               10$:    JSR     PC,$OFINIT              ;DO INITIALIZE ON CONTROLLER
4207 025006 103426                              BCS     20$                     ;BR IF INIT WAS OK
4208 025010                                     DELAY   250                     ;DELAY ABOUT .25 SECONDS
     025010 012727 000250                                                                       MOV     #250,(PC)+
     025014 000000                                                                              .WORD   0
     025016 013727 002116                                                                       MOV     L$DLY,(PC)+
     025022 000000                                                                              .WORD   0
     025024 005367 177772                                                                       DEC     -6(PC)
     025030 001375                                                                              BNE     .-4
     025032 005367 177756                                                                       DEC     -22(PC)
     025036 001367                                                                              BNE     .-20
4209 025040 005337 026540                       DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
4210 025044 001356                              BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
4211 025046 004737 020070                       JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4215 025052 010001                              MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4216 025054                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     025054 104455                                                                              TRAP    C$ERDF
     025056 000164                                                                              .WORD   116
     025060 003550                                                                              .WORD   SFIERR
     025062 011656                                                                              .WORD   SFIMSG
4217 025064                             20$:
4218 025064 012704 026350                       MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4219 025070 004737 010322                       JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4220 025074 103407                              BCS     23$                     ;BR, IF COMMAND ISSUED OK
4221 025076 004737 020070                       JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4225 025102 010001                              MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4226 025104                                     ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     025104 104456                                                                              TRAP    C$ERHRD
     025106 000165                                                                              .WORD   117
     025110 004754                                                                              .WORD   WRTMSG
     025112 011656                                                                              .WORD   SFIMSG
4227 025114                             23$:    CKLOOP                          ;LOOP IF SELECTED
     025114 104406                                                                              TRAP    C$CLP1
4228 025116 004737 010424                       JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4229 025122 103411                              BCS     30$                     ;BR, IF NO PROBLEM
4230 025124 016501 000000                       MOV     TSSR(R5),R1             ;GET TSSR
4231 025130 010004                              MOV     R0,R4                   ;SAVE PACKET ADDRESS
4232 025132 004737 020070                       JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4236 025136                                     ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
     025136 104456                                                                              TRAP    C$ERHRD
     025140 000166                                                                              .WORD   118
```

```
                                                                                .WORD   T29RWN
        025142  030260
                                                                                .WORD   PKTSSR
        025144  011670
4237    025146                          30$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
        025146  104406
4238    025150  013701  026376                  MOV     T29BFR+6,R1             ;PICK UP XSTO
4239    025154  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4240    025156  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4241    025162  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4242    025164  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
4243    025166  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4247    025172                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                                                                                TRAP    C$ERHRD
        025172  104456
                                                                                .WORD   119
        025174  000167
                                                                                .WORD   T29BOT
        025176  027751
                                                                                .WORD   EXPREC
        025200  016334
4248    025202                          40$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
        025202  104406
4249    025204  012737  140011  026500          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4250    025212  012704  026500                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4251    025216  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4252    025222  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4253    025226  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4254    025232  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4255    025236  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4256    025240  001406                          BEQ     70$                     ;BR, IF OK
4257    025242  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4261    025246                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
                                                                                TRAP    C$ERHRD
        025246  104456
                                                                                .WORD   120
        025250  000170
                                                                                .WORD   T29WDC
        025252  030577
                                                                                .WORD   PKTSSR
        025254  011670
4262    025256                          70$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
        025256  104406
4263    025260  012703  000001          150$:   MOV     #1.,R3                  ;NUMBER OF RECORDS TO WRITE TM
4264    025264  012737  141011  026500          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
4265    025272  012704  026500                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4266    025276  010465  177776          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4267    025302  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4268    025306  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
4269    025312  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4270    025316  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
4271    025320  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
4272    025322  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4276    025326                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
                                                                                TRAP    C$ERHRD
        025326  104456
                                                                                .WORD   121
        025330  000171
                                                                                .WORD   T29WDC
        025332  030577
                                                                                .WORD   PKTSSR
        025334  011670
4277    025336                          165$:   CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
        025336  104406
4278    025340  012737  140401  026500          MOV     #140401,T29PK3          ;READ REVERSE,ACK, COMMAND
4279    025346  013737  003072  026502          MOV     FREE,T29RB              ;NUMBER OF RECORDS TO SPACE BACK
4280    025354  012704  026500                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4281    025360  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4282    025364  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4283    025370  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4284    025374  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
```

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4285 025400  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4286 025402  001406                        BEQ     222$                    ;BR, IF OK
4287 025404  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4291 025410                                ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
     025410  104456                                                            TRAP    C$ERHRD
     025412  000172                                                            .WORD   122
     025414  031543                                                            .WORD   T29RDG
     025416  011670                                                            .WORD   PKTSSR
4292 025420                        222$:   CKLOOP                          ;LOOP IF SELECTED
     025420  104406                                                            TRAP    C$CLP1
4293 025422  013701  026376                MOV     T29BFR+6,R1             ;PICK UP XSTO
4294 025426  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4295 025430  052702  100000                BIS     #BIT15,R2               ;TMK SHOULD BE SET
4296 025434  020102                        CMP     R1,R2                   ;IS TMK SET
4297 025436  001406                        BEQ     226$                    ;BR, IF TMK WAS SET (GOOD)
4298 025440  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4302 025444                                ERRHRD  ERRNO,T29RRN,EXPREC     ;TMK NOT SET AFTER READ REV
     025444  104456                                                            TRAP    C$ERHRD
     025446  000173                                                            .WORD   123
     025450  032006                                                            .WORD   T29RRN
     025452  016334                                                            .WORD   EXPREC
4303 025454                        226$:   CKLOOP                          ;LOOP IF SELECTED
     025454  104406                                                            TRAP    C$CLP1
4304 025456                                ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     025456                                                                 L10041:
     025456  104403                                                            TRAP    C$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.
                                        ;
                                        ;-
4317 025460                                     BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     025460                                                                                     T1.4:
     025460  104402                                                                                    TRAP    C$BSUB
4318 025462  004737  032130                     JSR     PC,T29REST              ;SET COMMAND PACKET
4319 025466  004737  032222                     JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
4320 025472  004737  032264                     JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
4321 025476  012737  023420  026540             MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
4322 025504  004737  016634             10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4323 025510  103426                             BCS     20$                     ;BR IF INIT WAS OK
4324 025512                                     DELAY   250                     ;DELAY ABOUT .25 SECONDS
     025512  012727  000250                                                                   MOV     #250,(PC)+
     025516  000000                                                                           .WORD   0
     025520  013727  002116                                                                   MOV     L$DLY,(PC)+
     025524  000000                                                                           .WORD   0
     025526  005367  177772                                                                   DEC     -6(PC)
     025532  001375                                                                           BNE     .-4
     025534  005367  177756                                                                   DEC     -22(PC)
     025540  001367                                                                           BNE     .-20
4325 025542  005337  026540                 DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
4326 025546  001356                         BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
4327 025550  004737  020070                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4331 025554  010001                         MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4332 025556                                 ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     025556  104455                                                                           TRAP    C$ERDF
     025560  000174                                                                           .WORD   124
     025562  003550                                                                           .WORD   SFIERR
     025564  011656                                                                           .WORD   SFIMSG
4333 025566                             20$:
4334 025566  012704  026350                 MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4335 025572  004737  010322                 JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4336 025576  103407                         BCS     23$                     ;BR, IF COMMAND ISSUED OK
4337 025600  004737  020070                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4341 025604  010001                         MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4342 025606                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     025606  104456                                                                           TRAP    C$ERHRD
     025610  000175                                                                           .WORD   125
     025612  004754                                                                           .WORD   WRTMSG
     025614  011656                                                                           .WORD   SFIMSG
4343 025616                             23$:    CKLOOP                          ;LOOP IF SELECTED
     025616  104406                                                                           TRAP    C$CLP1
4344 025620  004737  010424                 JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4345 025624  103411                         BCS     30$                     ;BR, IF NO PROBLEM
4346 025626  016501  000000                 MOV     TSSR(R5),R1             ;GET TSSR
4347 025632  010004                         MOV     R0,R4                   ;SAVE PACKET ADDRESS
4348 025634  004737  020070                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4352 025640                                 ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
```

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                                                                                    TRAP    C$ERHRD
        025640  104456                                                            .WORD   126
        025642  000176                                                            .WORD   T29RWN
        025644  030260                                                            .WORD   PKTSSR
        025646  011670
4353    025650                          30$:    CKLOOP                          ;LOOP IF SELECTED
        025650  104406                                                            TRAP    C$CLP1
4354    025652  013701  026376                  MOV     T29BFR+6,R1             ;PICK UP XSTO
4355    025656  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4356    025660  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4357    025664  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4358    025666  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
4359    025670  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4363    025674                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                                                                                    TRAP    C$ERHRD
        025674  104456                                                            .WORD   127
        025676  000177                                                            .WORD   T29BOT
        025700  027751                                                            .WORD   EXPREC
        025702  016334
4364    025704                          40$:    CKLOOP                          ;LOOP IF SELECTED
        025704  104406                                                            TRAP    C$CLP1
4365    025706  012737  140011  026500          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4366    025714  012704  026500                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4367    025720  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4368    025724  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4369    025730  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4370    025734  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4371    025740  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4372    025742  001406                          BEQ     70$                     ;BR, IF OK
4373    025744  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4377    025750                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
                                                                                    TRAP    C$ERHRD
        025750  104456                                                            .WORD   128
        025752  000200                                                            .WORD   T29WDC
        025754  030577                                                            .WORD   PKTSSR
        025756  011670
4378    025760                          70$:    CKLOOP                          ;LOOP IF SELECTED
        025760  104406                                                            TRAP    C$CLP1
4379    025762  012703  000012          150$:   MOV     #10.,R3                 ;NUMBER OF RECORDS TO WRITE TM
4380    025766  012737  000001  026502          MOV     #1,T29RB                ;SET UP PACKET
4381    025774  012737  141011  026500          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
4382    026002  012704  026500                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4383    026006  010465  177776  155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4384    026012  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4385    026016  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
4386    026022  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4387    026026  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
4388    026030  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
4389    026032  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4393    026036                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
                                                                                    TRAP    C$ERHRD
        026036  104456                                                            .WORD   129
        026040  000201                                                            .WORD   T29WDC
        026042  030577                                                            .WORD   PKTSSR
        026044  011670
4394    026046                          165$:   CKLOOP                          ;LOOP IF SELECTED
        026046  104406                                                            TRAP    C$CLP1
4395    026050  005303                          DEC     R3                      ;BUMP COUNTER DOWN
4396    026052  001355                          BNE     155$                    ;BR, IF LESS THAN 10 TAPE MARKS
4397    026054  012737  140410  026500          MOV     #140410,T29PK3          ;SPACE REVERSE,ACK,CVC=1, COMMAND
4398    026062  012737  000001  026502          MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
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4399 026070  012704  026500                MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4400 026074  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4401 026100  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4402 026104  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4403 026110  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
4404 026114  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4405 026116  001406                        BEQ     222$                    ;BR, IF OK
4406 026120  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4410 026124                                ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
     026124  104456                                                                TRAP    C$ERHRD
     026126  000202                                                                .WORD   130
     026130  027622                                                                .WORD   T29WDE
     026132  011670                                                                .WORD   PKTSSR
4411 026134                        222$:   CKLOOP                          ;LOOP IF SELECTED
     026134  104406                                                                TRAP    C$CLP1
4412 026136  012737  100410  026500        MOV     #100410,T29PK3          ;SPACE REVERSE,ACK, COMMAND
4413 026144  012737  000005  026502        MOV     #5,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
4414 026152  012704  026500                MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4415 026156  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4416 026162  012737  000310  026540        MOV     #200.,T29DLY            ;NEED DELAY
4417 026170  004737  017110        230$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4418 026174  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4419 026200  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
4420 026204  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4421 026206  001425                        BEQ     260$                    ;BR, IF OK
4422 026210                                DELAY   250                     ;DELAY ABOUT .25 SECONDS
     026210  012727  000250                                                        MOV     #250,(PC)+
     026214  000000                                                                .WORD   0
     026216  013727  002116                                                        MOV     L$DLY,(PC)+
     026222  000000                                                                .WORD   0
     026224  005367  177772                                                        DEC     -6(PC)
     026230  001375                                                                BNE     .-4
     026232  005367  177756                                                        DEC     -22(PC)
     026236  001367                                                                BNE     .-20
4423 026240  005337  026540                DEC     T29DLY                  ;LOOP ROUTINE
4424 026244  001351                        BNE     230$                    ;LOOP BACK IF NOT ENOUGH DELAY
4425 026246  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4429 026252                                ERRHRD  ERRNO,T29SDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE REV CMD.
     026252  104456                                                                TRAP    C$ERHRD
     026254  000203                                                                .WORD   131
     026256  031624                                                                .WORD   T29SDG
     026260  011670                                                                .WORD   PKTSSR
4430 026262                        260$:   CKLOOP                          ;LOOP IF SELECTED
     026262  104406                                                                TRAP    C$CLP1
4431 026264  013701  026404                MOV     T29BFR+14,R1            ;PICK UP XST3
4432 026270  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4433 026272  052702  000001                BIS     #BIT0,R2                ;RIB SHOULD BE SET
4434 026276  020102                        CMP     R1,R2                   ;IS RIB SET
4435 026300  001406                        BEQ     270$                    ;BR, IF RIB WAS SET (GOOD)
4436 026302  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4440 026306                                ERRHRD  ERRNO,T29RIB,EXPREC     ;TMK NOT SET AFTER READ REV
     026306  104456                                                                TRAP    C$ERHRD
     026310  000204                                                                .WORD   132
     026312  031706                                                                .WORD   T29RIB
     026314  016334                                                                .WORD   EXPREC
4441 026316                        270$:   CKLOOP                          ;LOOP IF SELECTED
     026316  104406                                                                TRAP    C$CLP1
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 4442 026320                          330$:   CKLOOP                          ;LOOP IF SELECTED
      026320  104406                                                                  TRAP    C$CLP1
 4443 026322                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
      026322                                                                       L10042:
      026322  104403                                                                 TRAP    C$ESUB
 4444
 4445                                  :
 4446                                  :
 4447                                  :
 4448 026324  004737  017344                  JSR     PC,TSTLOOP                 ;DO WE NEED TO ITERATE TEST
 4449 026330  103002                          BCC     163$                       ;BR, IF NO LOOP REQUIRED
 4450 026332  000137  023674                  JMP     T29LOOP                    ;EXECUTE AGAIN
 4451 026336                          163$:   EXIT    TST                        ;ALL DONE THIS TEST
      026336  104432                                                                 TRAP    C$EXIT
      026340  003754                                                                 .WORD   L10036-.
```

```
4453                                    ;+
4454                                    ;LOCAL STORAGE FOR THIS TEST
4455                                    ;-
4457 026342                                     .BLKB   10-<.-TUV2A&7>
4459 026350                             T29PACKET:
4460 026350  014004                             .WORD   14004           ;COMMAND PACKET FOR TEST
4461 026352  026360                             .WORD   T29DATA         ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
4462 026354  000000                             .WORD   0               ;ADDRESS OF CHARACTERISTICS BLOCK
4463 026356  000012                             .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
4464 026360                             T29DATA:                        ;CHARACTERISTICS DATA BLOCK
4465 026360  026370                             .WORD   T29BFR          ;ADDRESS OF MESSAGE BUFFER
4466 026362  000000                             .WORD   0
4467 026364  000024                             .WORD   20.             ;LENGTH OF MESSAGE BUFFER
4468 026366  000000                             .WORD   0
4469 026370                             T29BFR: .BLKW   25.             ;MESSAGE BUFFER
4470                                    ;
4471                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
4472                                    ;
4474 026452                                     .BLKB   10-<.-TUV2A&7>
4476 026460                             T29PK2:
4477 026460  100006                             .WORD   100006          ;WRITE SUB SYS MEM COMMAND, AND ACK
4478 026462  026510                             .WORD   T29BF2          ;ADDRESS OF SELECT BLOCK DATA
4479 026464  000000                             .WORD   0
4480 026466  000006                             .WORD   6.              ;SIZE OF DATA PACKET
4482 026470                                     .BLKB   10-<.-TUV2A&7>
4484 026500                             T29PK3:
4485 026500  140005                             .WORD   140005          ;WRITE TAPE MARK RETRY COMMAND, CVC=1 AND ACK
4486 026502                             T29RB:
4487 026502  003072                     T29WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
4488 026504  000000                             .WORD   0
4489 026506  000000                     T29SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
4490                                            .EVEN
4491                                    ;
4492 026510                             T29BF2:
4493 026510     010                     T29BS0: .BYTE   10              ;BSEL0 AREA
4494 026511     200                     T29BS1: .BYTE   200             ;BSEL1 AREA
4495 026512  000000                     T29S2:  .WORD   0               ;SEL 2 AREA
4496 026514  000000                     T29S3:  .WORD   0               ;DATA AREA
4497                                    ;
4498                                            .EVEN
4499                                    ;TAPE MOTION PACKET COMMAND VALUES
4500 026516  140001                     T29RN:  .WORD   140001          ;READ DATA
4501 026520  140401                     T29WDR: .WORD   140401          ;READ DATA REVERSE
4502 026522  141001                     T29CON: .WORD   141001          ;READ PREVIOUS OPP=0
4503 026524  161001                             .WORD   161001          ;READ PREVIOUS OPP=1
4504 026526  141401                             .WORD   141401          ;WRITE TAPE MARK RETRY NEXT OPP=0
4505 026530  161401                             .WORD   161401          ;WRITE TAPE MARK RETRY NEXT OPP=1
4506 026532  177777                             .WORD   177777          ;END OF DATA
4507                                    ;
4508 026534  000000                     T29CNT: .WORD   0               ;TAPE RECORD COUNTER STORAGE AREA
4509 026536  000000                     T29RSZ: .WORD   0               ;RECORD STORAGE SIZE  AREA
4510 026540  000000                     T29DLY: .WORD                   ;DELAY COUNTER STORAGE AREA
```

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

026542  104  162  151  T29OFL: .ASCIZ  'Drive is OFFLINE'
026563  124  141  160  T29WNG: .ASCIZ  'Tape Position Incorrect After WRITE TAPE MARK RETRY Previous (OPP=1)'
026670  127  122  111  T29NEF: .ASCIZ  'WRITE TAPE MARK RETRY, At BOT, Failed To Set NEF (XSTO)'
026760  124  123  123  T29RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
027027  127  122  111  T29RRF: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Space Reverse, Read Forward) Command Failed
027143  127  122  111  T29RRG: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Read Forward, Space Reverse) Command Failed
027257  120  117  123  T29SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
027341  122  111  102  T29LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
027411  124  123  123  T29WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
027466  111  154  154  T29LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
027547  127  122  111  T29SSR: .ASCIZ  'WRITE TAPE MARK RETRY COMMAND Not Accepted'
027622  124  123  123  T29WDE: .ASCIZ  'TSSR Not Correct After SPACE REVERSE DATA Command'

027704  124  123  123  T29WRT: .ASCIZ  'TSSR Not Correct After WRITE Command'
027751  124  141  160  T29BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
030016  104  141  164  T29DTA: .ASCIZ  'Data Written To Tape Not Equal To Data Read From Tape'
030104  127  122  111  T29EOT: .ASCIZ  'WRITE TAPE MARK RETRY DATA OVER EOT GAVE NO TAPE STATUS ALERT'
030202  124  123  123  T29TM:  .ASCIZ  'TSSR Not Correct After SPACE REVERSE Into BOT'
030260  122  145  167  T29RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
030327  122  101  115  T29RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
030402  124  123  123  T29AM3: .ASCIZ  'TSSR Init. Failed After WRITE TAPE MARK RETRY COMMAND'
030470  124  123  123  T29WDD: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command, SWB Bit Set'
030577  124  123  123  T29WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command'
030671  103  126  103  T29VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
030744  124  123  102  T29BA:  .ASCIZ  'TSBA Not Correct After WRITE TAPE MARK RETRY DATA Command'
031036  127  122  111  T29WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
031125  122  145  141  T29LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
031207  122  145  141  T29LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
031271  122  145  163  T29PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
031357  122  145  141  T29TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
031445  104  141  164  T29NEQ: .ASCIZ  'Data WRITE TAPE MARK RETRY From Tape Not Correct, After SWB=1'
031543  124  123  123  T29RDG: .ASCIZ  'TSSR Incorrect After READ REVERSE Into Tape Mark'
031624  124  123  123  T29SDG: .ASCIZ  'TSSR Incorrect After SPACE REVERSE Into Tape Mark'
031706  127  122  111  T29RIB: .ASCIZ  'WRITE TAPE MARK RETRY At First Record, Failed To Set RIB (XST3)'
032006  124  115  113  T29RRN: .ASCIZ  'TMK (XSTO) Failed To Set After READ REVERSE Into Tape Mark'
032101  127  162  151  TST29ID:        .ASCIZ  'Write Tape Mark Retry'
                             .EVEN
                        ;+
                        ;
                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                        ;WRITE SUBSYSTEM MEMORY COMMAND
                        ;
                        ;-

032130                  T29REST:
032130                       SAVREG                          ;SAVE THE REGISTERS
032134  012701  026350       MOV     #T29PACKET,R1          ;START OF THE PACKET
032140  012721  140004       MOV     #140004,(R1)+          ;WRITE SUBSYSTEM MEM. WITH ACK, CVC=1
032144  012721  026360       MOV     #T29DATA,(R1)+         ;ADDRESS OF CHARAISTICS DATA BLOCK
032150  005021               CLR     (R1)+                  ;EXTENDED ADDRESS
032152  012721  000012       MOV     #10.,(R1)+             ;SIZE OF DATA BLOCK IN BYTES
```

```
4569 032156  012721  026370                MOV     #T29BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
4570 032162  005021                        CLR     (R1)+
4571 032164  012721  000024                MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
4572 032170  005021                        CLR     (R1)+
4573 032172  012711  000000                MOV     #0,(R1)                 ;SELECT DRIVE ZERO (0)
4574 032176  012702  000030                MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
4575 032202  012762  177777  026370  64$:  MOV     #177777,T29BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
4576 032210  005742                        TST     -(R2)                   ;NEXT LOCATION
4577 032212  020227  000000                CMP     R2,#0                   ;CHECK FOR END OF LOOP
4578 032216  001371                        BNE     64$                     ;KEEP GOING UNTIL DONE
4579 032220  000207                        RTS     PC                      ;RETURN
4580
4581
4582 032222                        T29RT2:
4583 032222                                SAVREG                          ;SAVE THE REGISTERS
4584 032226  012701  026460                MOV     #T29PK2,R1              ;START OF THE PACKET
4585 032232  012721  140006                MOV     #140006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1,
4586 032236  012721  026510                MOV     #T29BF2,(R1)+           ;ADDRESS OF DATA BLOCK
4587 032242  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
4588 032244  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
4589 032250  005021                        CLR     (R1)+
4590 032252  012701  026510                MOV     #T29BF2,R1              ;POINT TO DATA SEL AREA
4591 032256  005021                        CLR     (R1)+
4592 032260  005011                        CLR     (R1)
4593 032262  000207                        RTS     PC                      ;RETURN
4594 032264                        T29RT3:
4595 032264                                SAVREG                          ;SAVE THE REGISTERS
4596 032270  012701  026500                MOV     #T29PK3,R1              ;START OF THE PACKET
4597 032274  012721  000000                MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK,
4598 032300  012721  000000                MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
4599 032304  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
4600 032306  012711  000000                MOV     #0,(R1)         ;SIZE OF DATA BLOCK IN BYTES
4601 032312  000207                        RTS     PC                      ;RETURN
4602 032314                                ENDTST
     032314                                                      L10036:
     032314  104401                                                TRAP    C$ETST
```

```
                                        .SBTTL  TEST  2: SKIP TAPE MARKS
                                ;+
                                ;
                                ;THIS TEST VERIFIES PROPER OPERATION OF THE SKIP TAPE MARKS
                                ;FORWARD AND SKIP TAPE MARKS REVERSE COMMANDS. PROPER OPERATION
                                ;UNDER CONTROL OF ALL COMBINATIONS OF THE ENABLE SKIP TAPE MARKS
                                ;STOP (ESS) AND ENABLE TAPE MARKS STOP OFF BOT (ENB) BITS SPECIFIED
                                ;BY THE WRITE CHARACTERISTICS COMMAND. THE TEST CONSISTS OF THE
                                ;FOLLOWING SUBTESTS (FOR EACH SUBTEST, THE TAPE IS FIRST WRITTEN
                                ;WITH AN APPROPRIATE SERIES OF DATA RECORDS AND/OR TAPE MARKS
                                ;AND/OR DOUBLE TAPE MARKS.
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 11 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
                                        BGNTST                                  T2::
032316
032316
032316  005037  002170                  CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
032322  005037  003100                  CLR     KTFLG           ;HOLD OFF KT11
032326  012737  005672  002146          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
032334  012700  041111                  MOV     #TST30ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
032340  004737  017376                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
032344  012737  000001  002164          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:
032352
032352                                  BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                        T2.1:
032352                                                                  TRAP    C$BSUB
032352  104402
```

```
 4663 032354  004737  041132                  JSR     PC,T3OREST              ;SET COMMAND PACKET
 4664 032360  005037  036534                  CLR     T3OFCN                  ;CLEAR FILE COUNTER
 4665 032364  004737  041224                  JSR     PC,T3ORT2               ;SET UP OTHER COMMAND PACKET
 4666 032370  004737  041266                  JSR     PC,T3ORT3               ;SET UP OTHER COMMAND PACKET
 4667 032374  012737  176750  036536          MOV     #65000.,T3ODLY          ;SET UP DELAY COUNTER
 4668 032402  004737  016634          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 4669 032406  103426                          BCS     20$                     ;BR IF INIT WAS OK
 4670 032410                                  DELAY   250                     ;DELAY ROUTINE CALL
      032410  012727  000250                                                          MOV     #250,(PC)+
      032414  000000                                                                  .WORD   0
      032416  013727  002116                                                          MOV     L$DLY,(PC)+
      032422  000000                                                                  .WORD   0
      032424  005367  177772                                                          DEC     -6(PC)
      032430  001375                                                                  BNE     .-4
      032432  005367  177756                                                          DEC     -22(PC)
      032436  001367                                                                  BNE     .-20
 4671 032440  005337  036536                  DEC     T3ODLY                  ;BUMP COUNTER
 4672 032444  001356                          BNE     10$                     ;BR, IF MORE COUNTING TO DO
 4673 032446  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4677 032452  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 4678 032454                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      032454  104455                                                                  TRAP    C$ERDF
      032456  000311                                                                  .WORD   201
      032460  003550                                                                  .WORD   SFIERR
      032462  011656                                                                  .WORD   SFIMSG
 4679 032464                          20$:
 4680
 4681 032464  012704  036350                  MOV     #T3OPACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 4682
 4683                                 ;*************************************************************
 4684                                 ;
 4685                                 ;ISSUE WRITE CHARACTERISTICS COMMAND
 4686                                 ;
 4687                                 ;*************************************************************
 4688
 4689 032470  004737  010322                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 4690 032474  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
 4691 032476  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4695 032502  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 4696 032504                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      032504  104456                                                                  TRAP    C$ERHRD
      032506  000312                                                                  .WORD   202
      032510  004754                                                                  .WORD   WRTMSG
      032512  011656                                                                  .WORD   SFIMSG
 4697 032514                          23$:    CKLOOP                          ;LOOP IF SELECTED
      032514  104406                                                                  TRAP    C$CLP1
 4698
 4699                                 ;*************************************************************
 4700                                 ;
 4701                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
 4702                                 ;
 4703                                 ;*************************************************************
 4704
 4705 032516  004737  010424                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 4706 032522  103411                          BCS     30$                     ;BR, IF NO PROBLEM
 4707 032524  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
 4708 032526  016501  000000                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
```

```
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                        ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
                                                                                TRAP    C$ERHRD
                                                                                .WORD   203
                                                                                .WORD   T30RWN
                                                                                .WORD   PKTSSR
                                30$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1

                                ;***************************************************************
                                ;
                                ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
                                ;
                                ;***************************************************************

                                        MOV     T30BFR+6,R1             ;PICK UP XST0
                                        MOV     R1,R2                   ;SET UP EXPECTED
                                        BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
                                        CMP     R1,R2                   ;DOES EXP = REC'D
                                        BEQ     40$                     ;BR, IF EQUAL (OK)
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                        ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                                                                                TRAP    C$ERHRD
                                                                                .WORD   204
                                                                                .WORD   T30BOT
                                                                                .WORD   EXPREC
                                40$:    CKLOOP                          ;LUOP IF SELECTED
                                                                                TRAP    C$CLP1
                                        MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
                                64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
                                65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
                                        MOV     #2000.,T30SZ            ;SET RECORD SIZE AT 2000 BYTES

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

                                        MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
                                        MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
                                        MOV     T30FCN,R2               ;GET FILE COUNTER
                                        SWAB    R2                      ;MOVE TO UPPER BYTE
                                        MOV     R3,R1                   ;GET RECORD COUNTER
                                        ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
                                        MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
                                        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
                                        JSR     PC,WAITF                ;WAIT FOR SSR TO SET
                                        MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
                                        MOV     #SSR,R2                 ;SET UP EXPECTED
                                        CMP     R1,R2                   ;ARE THEY EQUAL
                                        BEQ     70$                     ;BR, IF OK
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                                                        ;SOFT ERROR, DON'T CARE ABOUT WRITE
                                                                        ;COMMAND'S RESULTS - CHECKING SKIP
                                                                        ;TAPE MARK COMMAND
                                        ERRSOFT ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
```

```
                                                                                    TRAP    C$ERSOFT
        032712  104457                                                              .WORD   205
        032714  000315                                                              .WORD   T30WDD
        032716  037050                                                              .WORD   PKTSSR
        032720  011670
 4765   032722                          70$:    CKLOOP                  ;LOOP IF SELECTED
        032722  104406                                                              TRAP    C$CLP1
 4766   032724  005203                          INC     R3              ;COUNT THE RECORD COUNTER DOWN
 4767   032726  020327  000021                  CMP     R3,#21          ;AT 20 YET
 4768   032732  001331                          BNE     65$             ;BR, IF NOT AT 20 RECORDS WRITTEN
 4769
 4770                                  ;*************************************************************
 4771                                  ;
 4772                                  ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
 4773                                  ;
 4774                                  ;*************************************************************
 4775
 4776   032734  012737  141011  036500          MOV     #141011,T30PK3  ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
 4777   032742  012704  036500                  MOV     #T30PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
 4778   032746  010465  177776                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
 4779   032752  004737  017110                  JSR     PC,WAITF        ;WAIT FOR SSR TO SET
 4780   032756  016501  000000                  MOV     TSSR(R5),R1     ;PICK UP TSSR
 4781   032762  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED (SSR ONLY)
 4782   032766  020102                          CMP     R1,R2           ;WAS STATUS GOOD
 4783   032770  001406                          BEQ     160$            ;BR, IF TERMINATION WAS GOOD
 4784   032772  004737  020070                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4788   032776                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
        032776  104456                                                              TRAP    C$ERHRD
        033000  000316                                                              .WORD   206
        033002  040242                                                              .WORD   T30WDC
        033004  011670                                                              .WORD   PKTSSR
 4789   033006                          160$:   CKLOOP                  ;LOOP IF SELECTED
        033006  104406                                                              TRAP    C$CLP1
 4790   033010  005237  036534                  INC     T30FCN          ;COUNT THE "FILE" COUNTER DOWN
 4791   033014  023727  036534  000006          CMP     T30FCN,#6       ;WRITE 5 FILE TO TAPE
 4792   033022  001273                          BNE     64$             ;BR, IF NOT AT 5 FILES WRITTEN
 4793
 4794                                  ;*************************************************************
 4795                                  ;
 4796                                  ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
 4797                                  ;
 4798                                  ;*************************************************************
 4799
 4800   033024  012737  141011  036500          MOV     #141011,T30PK3  ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
 4801   033032  012704  036500                  MOV     #T30PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
 4802   033036  010465  177776                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
 4803   033042  004737  017110                  JSR     PC,WAITF        ;WAIT FOR SSR TO SET
 4804   033046  016501  000000                  MOV     TSSR(R5),R1     ;PICK UP TSSR
 4805   033052  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED (SSR ONLY)
 4806   033056  020102                          CMP     R1,R2           ;WAS STATUS GOOD
 4807   033060  001406                          BEQ     165$            ;BR, IF TERMINATION WAS GOOD
 4808   033062  004737  020070                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4812   033066                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
        033066  104456                                                              TRAP    C$ERHRD
        033070  000317                                                              .WORD   207
        033072  040242                                                              .WORD   T30WDC
        033074  011670                                                              .WORD   PKTSSR
 4813   033076                          165$:   CKLOOP                  ;LOOP IF SELECTED
```

```
033076  104406                                                                          TRAP    C$CLP1

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

033100  004737  010424                      JSR     PC,REWIND                   ;CALL TAPE REWIND COMMAND
033104  103411                              BCS     170$                        ;BR, IF NO PROBLEM
033106  010004                              MOV     R0,R4                       ;GET PACKET ADDRESS
033110  016501  000000                      MOV     TSSR(R5),R1                 ;GET STATUS REGISTER
033114  004737  020070                      JSR     PC,FATCHK                   ;INC AND CHECK FOR MORE THAN 25 ERRORS
033120                                      ERRHRD  ERRNO,T30RWN,PKTSSR         ;REWIND NOT ACCEPTED
033120  104456                                                                          TRAP    C$ERHRD
033122  000320                                                                          .WORD   208
033124  040120                                                                          .WORD   T30RWN
033126  011670                                                                          .WORD   PKTSSR
033130                              170$:   CKLOOP                              ;LOOP IF SELECTED
033130  104406                                                                          TRAP    C$CLP1

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

033132  013701  036376                      MOV     T30BFR+6,R1                 ;PICK UP XSTO
033136  010102                              MOV     R1,R2                       ;SET UP EXPECTED
033140  052702  000002                      BIS     #BIT1,R2                    ;SET BOT BIT IN EXPECTED
033144  020102                              CMP     R1,R2                       ;DOES EXP = REC'D
033146  001406                              BEQ     180$                        ;BR, IF EQUAL (OK)
033150  004737  020070                      JSR     PC,FATCHK                   ;INC AND CHECK FOR MORE THAN 25 ERRORS
033154                                      ERRHRD  ERRNO,T30BOT,EXPREC         ;TAPE NOT AT BOT AFTER REWIND
033154  104456                                                                          TRAP    C$ERHRD
033156  000321                                                                          .WORD   209
033160  037721                                                                          .WORD   T30BOT
033162  016334                                                                          .WORD   EXPREC
033164                              180$:   CKLOOP                              ;LOOP IF SELECTED
033164  104406                                                                          TRAP    C$CLP1
033166  012703  036516                      MOV     #T30IMV,R3                  ;SET UP POINTER TO COMMAND TABLE

033172  011337  036366              182$:   MOV     (R3),T30ETM                 ;GET NEXT COMMAND
033176  012704  036350                      MOV     #T30PACKET,R4               ;SUBROUTINE NEEDS PACKET ADDRESS

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

033202  004737  010322                      JSR     PC,WRTCHR                   ;ISSUE WRITE CHARACTERISTICS
033206  103407                              BCS     188$                        ;BR, IF COMMAND ISSUED OK
033210  004737  020070                      JSR     PC,FATCHK                   ;INC AND CHECK FOR MORE THAN 25 ERRORS
033214  010001                              MOV     R0,R1                       ;SAVE CONTENTS OF TSSR
033216                                      ERRHRD  ERRNO,WRTMSG,SFIMSG         ;WRITE CHARACTERISTISC FAILED
033216  104456                                                                          TRAP    C$ERHRD
```

```
033220  000322                                                          .WORD   210
033222  004754                                                          .WORD   WRTMSG
033224  011656                                                          .WORD   SFIMSG
4868 033226                     188$:   CKLOOP                          ;LOOP IF SELECTED
033226  104406                                                          TRAP    C$CLP1
4869
4870                            ;***************************************************************
4871                            ;
4872                            ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
4873                            ;
4874                            ;***************************************************************
4875
4876 033230  012737  141010  036500        MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
4877 033236  012737  000001  036502        MOV     #1,T30RB                ;SET UP NUMBER TO SKIP
4878 033244  012704  036500                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4879 033250  010465  177776        189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4880 033254  012737  176750  036536        MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
4881 033262  004737  017110        190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4882 033266  016501  000000                MOV     TSSR(R5),R1             ;PICK UP TSSR
4883 033272  032701  000200                BIT     #SSR,R1                 ;IS SSR SET YET
4884 033276  001017                        BNE     191$                    ;BR, IF SSR IS SET
4885 033300                                DELAY   250                     ;CALL DELAY ROUTINE
033300  012727  000250                                                      MOV     #250,(PC)+
033304  000000                                                            .WORD   0
033306  013727  002116                                                      MOV     L$DLY,(PC)+
033312  000000                                                            .WORD   0
033314  005367  177772                                                      DEC     -6(PC)
033320  001375                                                            BNE     .-4
033322  005367  177756                                                      DEC     -22(PC)
033326  001367                                                            BNE     .-20
4886 033330  005337  036536                DEC     T30DLY                  ;BUMP DELAY ROUTINE
4887 033334  001352                        BNE     190$                    ;BR, IF MORE DELAY TO GO
4888 033336  012702  000200        191$:   MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4889 033342  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
4890 033344  001406                        BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
4891 033346  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4895 033352                                ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
033352  104456                                                            TRAP    C$ERHRD
033354  000323                                                            .WORD   211
033356  036774                                                            .WORD   T30SKM
033360  011670                                                            .WORD   PKTSSR
4896 033362                     192$:   CKLOOP                          ;LOOP IF SELECTED
033362  104406                                                          TRAP    C$CLP1
4897
4898                            ;***************************************************************
4899                            ;
4900                            ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
4901                            ;
4902                            ;***************************************************************
4903
4904 033364  013701  036376                MOV     T30BFR+6,R1             ;PICK UP XST0
4905 033370  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4906 033372  052702  100000                BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
4907 033376  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
4908 033400  001406                        BEQ     195$                    ;BR, IF EQUAL (OK)
4909 033402  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4913 033406                                ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
```

```
                                                                                    TRAP    C$ERHRD
        033406  104456                                                            .WORD   212
        033410  000324                                                            .WORD   T30TMK
        033412  040374                                                            .WORD   EXPREC
        033414  016334
 4914   033416                          195$:   CKLOOP                          ;LOOP IF SELECTED
        033416  104406                                                            TRAP    C$CLP1
 4915   033420  012700  177777                  MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
 4916   033424  004737  020362                  JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
 4917   033430  013737  003072  036502          MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
 4918
 4919                                  ;*****************************************************************
 4920                                  ;
 4921                                  ;READ FORWARD,ACK,CVC=1 COMMAND
 4922                                  ;
 4923                                  ;*****************************************************************
 4924
 4925   033436  012737  140001  036500          MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
 4926   033444  012704  036500                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4927   033450  012737  003720  036506          MOV     #2000.,T30SZ            ;SET UP RECORD SIZE IN PACKET
 4928   033456  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4929   033462  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 4930   033466  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4931   033472  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 4932   033476  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 4933   033500  001406                          BEQ     200$                    ;BR, IF OK
 4934   033502  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4938   033506                                  ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        033506  104456                                                                  TRAP    C$ERHRD
        033510  000325                                                                  .WORD   213
        033512  037273                                                                  .WORD   T30RDF
        033514  011670                                                                  .WORD   PKTSSR
 4939   033516                          200$:   CKLOOP                          ;LOOP IF SELECTED
        033516  104406                                                                  TRAP    C$CLP1
 4940   033520  017701  147346                  MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
 4941   033524  012702  177777                  MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
 4942   033530  020102                          CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
 4943   033532  001006                          BNE     220$                    ;BR, IF NO DATA TRANS (GOOD)
 4944   033534  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4948   033540                                  ERRHRD  ERRNO,T30DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
        033540  104456                                                                  TRAP    C$ERHRD
        033542  000326                                                                  .WORD   214
        033544  040750                                                                  .WORD   T30DTR
        033546  016334                                                                  .WORD   EXPREC
 4949   033550                          220$:   CKLOOP                          ;LOOP IF SELECTED
        033550  104406                                                                  TRAP    C$CLP1
 4950   033552  012702  001001                  MOV     #1001,R2                ;SET UP RECORD NUMBER EXPECTED (FILE 2)
 4951   033556  017701  147310                  MOV     @FREE,R1                ;GET INFO FROM BUFFER
 4952   033562  020201                          CMP     R2,R1                   ;ARE THEY EQUAL
 4953   033564  001406                          BEQ     228$                    ;BR, IF EQUAL (OK)
 4954   033566  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4958   033572                                  ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
        033572  104456                                                                  TRAP    C$ERHRD
        033574  000327                                                                  .WORD   215
        033576  037122                                                                  .WORD   T30PTB
        033600  016334                                                                  .WORD   EXPREC
 4959   033602                          228$:   CKLOOP                          ;LOOP IF SELECTED
        033602  104406                                                                  TRAP    C$CLP1
```

```
4960
4961                                    ;*****************************************************************
4962                                    ;
4963                                    ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
4964                                    ;
4965                                    ;*****************************************************************
4966
4967 033604  004737  010424                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4968 033610  103411                            BCS     230$                    ;BR, IF NO PROBLEM
4969 033612  010004                            MOV     R0,R4                   ;SAVE PACKET ADDRESS
4970 033614  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR STATUS
4971 033620  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4975 033624                                    ERRHRD  ERRNO,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
     033624  104456                                                                    TRAP    C$ERHRD
     033626  000330                                                                    .WORD   216
     033630  040120                                                                    .WORD   T3ORWN
     033632  011670                                                                    .WORD   PKTSSR
4976 033634                            230$:   CKLOOP                          ;LOOP IF SELECTED
     033634  104406                                                                    TRAP    C$CLP1
4977
4978                                    ;*****************************************************************
4979                                    ;
4980                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
4981                                    ;
4982                                    ;*****************************************************************
4983
4984 033636  013701  036376                    MOV     T30BFR+6,R1             ;PICK UP XST0
4985 033642  010102                            MOV     R1,R2                   ;SET UP EXPECTED
4986 033644  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4987 033650  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
4988 033652  001406                            BEQ     240$                    ;BR, IF EQUAL (OK)
4989 033654  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4993 033660                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     033660  104456                                                                    TRAP    C$ERHRD
     033662  000331                                                                    .WORD   217
     033664  037721                                                                    .WORD   T30BOT
     033666  016334                                                                    .WORD   EXPREC
4994 033670                            240$:   CKLOOP                          ;LOOP IF SELECTED
     033670  104406                                                                    TRAP    C$CLP1
4995 033672  005723                            TST     (R3)+                   ;POINT TO NEXT POSITION
4996 033674  011301                            MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
4997 033676  020127  177777                    CMP     R1,#177777              ;END OF TABLE MARKER
4998 033702  001402                            BEQ     330$                    ;BR, IF AT END OF TABLE
4999 033704  000137  033172                    JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
5000 033710                            330$:   CKLOOP                          ;LOOP IF SELECTED
     033710  104406                                                                    TRAP    C$CLP1
5001 033712                                    ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     033712                                                                     L10044:
     033712  104403                                                                    TRAP    C$ESUB
```

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

                                                BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                        T2.2:
                                                                                                TRAP    C$BSUB
                                                JSR     PC,T30REST      ;SET COMMAND PACKET
                                                CLR     T30FCN          ;CLEAR FILE COUNTER
                                                JSR     PC,T30RT2       ;SET UP OTHER COMMAND PACKET
                                                JSR     PC,T30RT3       ;SET UP OTHER COMMAND PACKET
                                                MOV     #65000.,T30DLY  ;SET UP DELAY COUNTER
                                        10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
                                                BCS     20$             ;BR IF INIT WAS OK
                                                DELAY   250             ;DELAY ROUTINE CALL
                                                                                MOV     #250,(PC)+
                                                                                .WORD   0
                                                                                MOV     L$DLY,(PC)+
                                                                                .WORD   0
                                                                                DEC     -6(PC)
                                                                                BNE     .-4
                                                                                DEC     -22(PC)
                                                                                BNE     .-20
                                                DEC     T30DLY          ;BUMP COUNTER
                                                BNE     10$             ;BR, IF MORE COUNTING TO DO
                                                JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                                MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
                                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                                                                                TRAP    C$ERDF
                                                                                .WORD   218
                                                                                .WORD   SFIERR
                                                                                .WORD   SFIMSG
                                        20$:

                                                MOV     #T30PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS

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

                                                JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
                                                BCS     23$             ;BR, IF COMMAND ISSUED OK
                                                JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                                MOV     R0,R1           ;SAVE CONTENTS OF TSSR
                                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                                                                                TRAP    C$ERHRD
```

```
                                                                                .WORD   219
                                                                                .WORD   WRTMSG
                                                                                .WORD   SFIMSG
5051 034056                     23$:    CKLOOP                  ;LOOP IF SELECTED
     034056  104406                                                            TRAP    C$CLP1
5052
5053                            ;*************************************************************
5054                            ;
5055                            ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5056                            ;
5057                            ;*************************************************************
5058
5059 034060  004737  010424            JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5060 034064  103411                    BCS     30$                     ;BR, IF NO PROBLEM
5061 034066  010004                    MOV     R0,R4                   ;GET PACKET ADDRESS
5062 034070  016501  000000            MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5063 034074  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5067 034100                            ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     034100  104456                                                            TRAP    C$ERHRD
     034102  000334                                                            .WORD   220
     034104  040120                                                            .WORD   T30RWN
     034106  011670                                                            .WORD   PKTSSR
5068 034110                     30$:    CKLOOP                  ;LOOP IF SELECTED
     034110  104406                                                            TRAP    C$CLP1
5069
5070                            ;*************************************************************
5071                            ;
5072                            ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5073                            ;
5074                            ;*************************************************************
5075
5076 034112  013701  036376            MOV     T30BFR+6,R1             ;PICK UP XST0
5077 034116  010102                    MOV     R1,R2                   ;SET UP EXPECTED
5078 034120  052702  000002            BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5079 034124  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
5080 034126  001406                    BEQ     40$                     ;BR, IF EQUAL (OK)
5081 034130  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5085 034134                            ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034134  104456                                                            TRAP    C$ERHRD
     034136  000335                                                            .WORD   221
     034140  037721                                                            .WORD   T30BOT
     034142  016334                                                            .WORD   EXPREC
5086 034144                     40$:    CKLOOP                  ;LOOP IF SELECTED
     034144  104406                                                            TRAP    C$CLP1
5087 034146  012737  000001  036534        MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
5088 034154  012703  000001        64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
5089 034160  013737  003072  036502  65$:  MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
5090 034166  012737  000024  036506        MOV     #20.,T30SZ              ;SET RECORD SIZE AT 2000 BYTES
5091
5092                            ;*************************************************************
5093                            ;
5094                            ;WRITE DATA,ACK,CVC=1 COMMAND
5095                            ;
5096                            ;*************************************************************
5097
5098 034174  012737  140005  036500        MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5099 034202  012704  036500                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
```

```
5100 034206  013702  036534                MOV     T30FCN,R2               ;GET FILE COUNTER
5101 034212  000302                        SWAB    R2                      ;MOVE TO UPPER BYTE
5102 034214  010301                        MOV     R3,R1                   ;GET RECORD COUNTER
5103 034216  060201                        ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
5104 034220  010177  146646                MOV     R1,@#FREE               ;MOV TO OUT PUT BUFFER
5105 034224  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5106 034230  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5107 034234  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5108 034240  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
5109 034244  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
5110 034246  001406                        BEQ     70$                     ;BR, IF OK
5111 034250  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5115                                                                       ;SOFT ERROR, DON'T CARE ABOUT WRITE
5116                                                                       ;COMMAND'S RESULTS - CHECKING SKIP
5117                                                                       ;TAPE MARK COMMAND
5118 034254                                ERRSOFT ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     034254  104457                                                                   TRAP    C$ERSOFT
     034256  000336                                                                   .WORD   222
     034260  037050                                                                   .WORD   T30WDD
     034262  011670                                                                   .WORD   PKTSSR
5119 034264                          70$:  CKLOOP                           ;LOOP IF SELECTED
     034264  104406                                                                   TRAP    C$CLP1
5120 034266  005203                        INC     R3                      ;COUNT THE RECORD COUNTER DOWN
5121 034270  020327  000021                CMP     R3,#21                  ;AT 20 YET
5122 034274  001331                        BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
5123
5124                                 ;*************************************************************
5125                                 ;
5126                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5127                                 ;
5128                                 ;*************************************************************
5129
5130 034276  012737  141011  036500        MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5131 034304  012704  036500                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5132 034310  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5133 034314  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5134 034320  016501  000000                MOV     TSSR(R5),R1             ;PICK UP TSSR
5135 034324  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
5136 034330  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
5137 034332  001406                        BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
5138 034334  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5142 034340                                ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034340  104456                                                                   TRAP    C$ERHRD
     034342  000337                                                                   .WORD   223
     034344  040242                                                                   .WORD   T30WDC
     034346  011670                                                                   .WORD   PKTSSR
5143 034350                          160$: CKLOOP                           ;LOOP IF SELECTED
     034350  104406                                                                   TRAP    C$CLP1
5144 034352  005237  036534                INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
5145 034356  023727  036534  000031        CMP     T30FCN,#25.             ;WRITE 25 FILES TO TAPE
5146 034364  001273                        BNE     64$                     ;BR, IF NOT AT 25 FILES WRITTEN
5147
5148                                 ;*************************************************************
5149                                 ;
5150                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5151                                 ;
5152                                 ;*************************************************************
```

```
5153
5154 034366  012737  141011  036500          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5155 034374  012704  036500                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5156 034400  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5157 034404  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5158 034410  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
5159 034414  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
5160 034420  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
5161 034422  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
5162 034424  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5166 034430                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034430  104456                                                                  TRAP    C$ERHRD
     034432  000340                                                                  .WORD   224
     034434  040242                                                                  .WORD   T30WDC
     034436  011670                                                                  .WORD   PKTSSR
5167 034440                          165$:   CKLOOP                          ;LOOP IF SELECTED
     034440  104406                                                                  TRAP    C$CLP1
5168
5169                                 ;*****************************************************************
5170                                 ;
5171                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5172                                 ;
5173                                 ;*****************************************************************
5174
5175 034442  004737  010424                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5176 034446  103411                          BCS     170$                    ;BR, IF NO PROBLEM
5177 034450  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
5178 034452  016501  000000                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5179 034456  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5183 034462                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     034462  104456                                                                  TRAP    C$ERHRD
     034464  000341                                                                  .WORD   225
     034466  040120                                                                  .WORD   T30RWN
     034470  011670                                                                  .WORD   PKTSSR
5184 034472                          170$:   CKLOOP                          ;LOOP IF SELECTED
     034472  104406                                                                  TRAP    C$CLP1
5185
5186                                 ;*****************************************************************
5187                                 ;
5188                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5189                                 ;
5190                                 ;*****************************************************************
5191
5192 034474  013701  036376                  MOV     T30BFR+6,R1             ;PICK UP XST0
5193 034500  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5194 034502  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5195 034506  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5196 034510  001406                          BEQ     180$                    ;BR, IF EQUAL (OK)
5197 034512  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5201 034516                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034516  104456                                                                  TRAP    C$ERHRD
     034520  000342                                                                  .WORD   226
     034522  037721                                                                  .WORD   T30BOT
     034524  016334                                                                  .WORD   EXPREC
5202 034526                          180$:   CKLOOP                          ;LOOP IF SELECTED
     034526  104406                                                                  TRAP    C$CLP1
5203 034530  012737  000002  036534          MOV     #2,T30FCN               ;SET TO NUMBER OF SKIP "FILES"
```

```
5204 034536  012703  036516                    MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
5205
5206 034542  011337  036366          182$:     MOV     (R3),T30ETM             ;GET NEXT COMMAND
5207 034546  012704  036350                    MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5208
5209                                 ;*************************************************************
5210                                 ;
5211                                 ;ISSUE WRITE CHARACTERISTICS COMMAND
5212                                 ;
5213                                 ;*************************************************************
5214
5215 034552  004737  010322                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5216 034556  103407                          BCS     188$                    ;BR, IF COMMAND ISSUED OK
5217 034560  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5221 034564  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5222 034566                                   ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     034566  104456                                                                  TRAP    C$ERHRD
     034570  000343                                                                  .WORD   227
     034572  004754                                                                  .WORD   WRTMSG
     034574  011656                                                                  .WORD   SFIMSG
5223 034576                          188$:     CKLOOP                          ;LOOP IF SELECTED
     034576  104406                                                                  TRAP    C$CLP1
5224
5225                                 ;*************************************************************
5226                                 ;
5227                                 ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
5228                                 ;
5229                                 ;*************************************************************
5230
5231 034600  012737  141010  036500          MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
5232 034606  013737  036534  036502          MOV     T30FCN,T30RB            ;SET UP NUMBER TO SKIP
5233 034614  012704  036500                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5234 034620  010465  177776          189$:     MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5235 034624  012737  176750  036536          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
5236 034632  004737  017110          190$:     JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5237 034636  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
5238 034642  032701  000200                  BIT     #SSR,R1                 ;IS SSR SET YET
5239 034646  001017                          BNE     191$                    ;BR, IF SSR IS SET
5240 034650                                   DELAY   250                     ;CALL DELAY ROUTINE
     034650  012727  000250                                                          MOV     #250.,(PC)+
     034654  000000                                                                  .WORD   0
     034656  013727  002116                                                          MOV     L$DLY,(PC)+
     034662  000000                                                                  .WORD   0
     034664  005367  177772                                                          DEC     -6(PC)
     034670  001375                                                                  BNE     .-4
     034672  005367  177756                                                          DEC     -22(PC)
     034676  001367                                                                  BNE     .-20
5241 034700  005337  036536                  DEC     T30DLY                  ;BUMP DELAY ROUTINE
5242 034704  001352                          BNE     190$                    ;BR, IF MORE DELAY TO GO
5243 034706  012702  000200          191$:     MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
5244 034712  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
5245 034714  001406                          BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
5246 034716  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5250 034722                                   ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
     034722  104456                                                                  TRAP    C$ERHRD
     034724  000344                                                                  .WORD   228
     034726  036774                                                                  .WORD   T30SKM
```

```
     034730  011670                                                                .WORD    PKTSSR
     034732                          192$:   CKLOOP                        ;LOOP IF SELECTED
     034732  104406                                                                TRAP     C$CLP1

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

     034734  013701  036376                  MOV     T30BFR+6,R1           ;PICK UP XSTO
     034740  010102                          MOV     R1,R2                 ;SET UP EXPECTED
     034742  052702  100000                  BIS     #BIT15,R2             ;SET TMK BIT IN EXPECTED
     034746  020102                          CMP     R1,R2                 ;DOES EXP = REC'D
     034750  001406                          BEQ     195$                  ;BR, IF EQUAL (OK)
     034752  004737  020070                  JSR     PC,FATCHK             ;INC AND CHECK FOR MORE THAN 25 ERRORS
     034756                                  ERRHRD  ERRNO,T30TMK,EXPREC   ;TMK NOT SET AFTER WRT TAPE MARK
     034756  104456                                                                TRAP     C$ERHRD
     034760  000345                                                                .WORD    229
     034762  040374                                                                .WORD    T30TMK
     034764  016334                                                                .WORD    EXPREC
     034766                          195$:   CKLOOP                        ;LOOP IF SELECTED
     034766  104406                                                                TRAP     C$CLP1
     034770  012700  177777                  MOV     #177777,R0            ;VALUE TO WRITTEN TO MEMORY
     034774  004737  020362                  JSR     PC,FILLMEM            ;FILL MEM WITH ALL ONES
     035000  013737  003072  036502          MOV     FREE,T30RB            ;STARTING READ BUFFER ADDRESS

                                     ;*****************************************************
                                     ;
                                     ;READ FORWARD,ACK,CVC=1 COMMAND
                                     ;
                                     ;*****************************************************

     035006  012737  140001  036500          MOV     #140001,T30PK3        ;READ FORWARD,ACK,CVC=1 COMMAND
     035014  012704  036500                  MOV     #T30PK3,R4            ;SET UP R4 WITH PACKET ADDRESS
     035020  012737  000024  036506          MOV     #20.,T30SZ            ;SET UP RECORD SIZE IN PACKET
     035026  010465  177776                  MOV     R4,TSDB(R5)           ;ISSUE COMMAND
     035032  004737  017110                  JSR     PC,WAITF              ;WAIT FOR SSR TO SET
     035036  016501  000000                  MOV     TSSR(R5),R1           ;GET TSSR CONTENTS
     035042  012702  000200                  MOV     #SSR,R2               ;SET UP EXPECTED
     035046  020102                          CMP     R1,R2                 ;ARE THEY EQUAL
     035050  001406                          BEQ     200$                  ;BR, IF OK
     035052  004737  020070                  JSR     PC,FATCHK             ;INC AND CHECK FOR MORE THAN 25 ERRORS
     035056                                  ERRHRD  ERRNO,T30RDF,PKTSSR   ;TSSR INCORRECT AFTER WRITE DATA
     035056  104456                                                                TRAP     C$ERHRD
     035060  000346                                                                .WORD    230
     035062  037273                                                                .WORD    T30RDF
     035064  011670                                                                .WORD    PKTSSR
     035066                          200$:   CKLOOP                        ;LOOP IF SELECTED
     035066  104406                                                                TRAP     C$CLP1
     035070  017701  145776                  MOV     @FREE,R1              ;FIRST LOC IN READ BUFFER
     035074  012702  177777                  MOV     #177777,R2            ;EXPECTED IF NO DATA TRANS.
     035100  020102                          CMP     R1,R2                 ;DID ANY DATA GET TRANSFERRED
     035102  001006                          BNE     220$                  ;BR, IF NO DATA TRANS (GOOD)
     035104  004737  020070                  JSR     PC,FATCHK             ;INC AND CHECK FOR MORE THAN 25 ERRORS
     035110                                  ERRHRD  ERRNO,T30DTR,EXPREC   ;DATA TRANSFERRED ON READ TAPE MARK
     035110  104456                                                                TRAP     C$ERHRD
```

```
035112  000347                                                                           .WORD   231
035114  040750                                                                           .WORD   T30DTR
035116  016334                                                                           .WORD   EXPREC
035120                          220$:   CKLOOP                          ;LOOP IF SELECTED
035120  104406                                                                           TRAP    C$CLP1
035122  013702  036534                  MOV     T30FCN,R2               ;GET NUMBER OF SKIPS
035126  005202                          INC     R2                      ;SET TO CORRECT FILE VALUE
035130  000302                          SWAB    R2                      ;SWAP BYTE HALVES
035132  052702  000001                  BIS     #BIT0,R2                ;SET FOR RECORD #1
035136  017701  145730                  MOV     @FREE,R1                ;GET INFO FROM BUFFER
035142  020201                          CMP     R2,R1                   ;ARE THEY EQUAL
035144  001406                          BEQ     228$                    ;BR, IF EQUAL (OK)
035146  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
035152                                  ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
035152  104456                                                                           TRAP    C$ERHRD
035154  000350                                                                           .WORD   232
035156  037122                                                                           .WORD   T30PTB
035160  016334                                                                           .WORD   EXPREC
035162                          228$:   CKLOOP                          ;LOOP IF SELECTED
035162  104406                                                                           TRAP    C$CLP1

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

035164  004737  010424                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
035170  103411                          BCS     230$                    ;BR, IF NO PROBLEM
035172  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
035174  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
035200  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
035204                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
035204  104456                                                                           TRAP    C$ERHRD
035206  000351                                                                           .WORD   233
035210  040120                                                                           .WORD   T30RWN
035212  011670                                                                           .WORD   PKTSSR
035214                          230$:   CKLOOP                          ;LOOP IF SELECTED
035214  104406                                                                           TRAP    C$CLP1

                                ;*****************************************************************
                                ;
                                ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
                                ;
                                ;*****************************************************************

035216  013701  036376                  MOV     T30BFR+6,R1             ;PICK UP XST0
035222  010102                          MOV     R1,R2                   ;SET UP EXPECTED
035224  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
035230  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
035232  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
035234  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
035240                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
035240  104456                                                                           TRAP    C$ERHRD
035242  000352                                                                           .WORD   234
035244  037721                                                                           .WORD   T30BOT
035246  016334                                                                           .WORD   EXPREC
```

```
5352 035250                          240$:   CKLOOP                          ;LOOP IF SELECTED
     035250  104406                                                                      TRAP    C$CLP1
5353 035252  005723                          TST     (R3)+                   ;POINT TO NEXT POSITION
5354 035254  011301                          MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
5355 035256  020127  177777                  CMP     R1,#177777              ;END OF TABLE MARKER
5356 035262  001410                          BEQ     330$                    ;BR, IF AT END OF TABLE
5357 035264  013701  036534                  MOV     T30FCN,R1               ;GET NUMBER OF SKIPS
5358 035270  000241                          CLC                             ;CLEAR THE CARRY BIT
5359 035272  006101                          ROL     R1                      ;PUSH OVER ONE POSITION
5360 035274  010137  036534                  MOV     R1,T30FCN               ;PUT BACK IN COUNTER
5361 035300  000137  034542                  JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
5362 035304                          330$:   CKLOOP                          ;LOOP IF SELECTED
     035304  104406                                                                      TRAP    C$CLP1
5363 035306                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     035306                                                                  L10045:
     035306  104403                                                                      TRAP    C$ESUB
```

```
5365                                    ;+
5366                                    ;
5367                                    ;TEST 2, SUBTEST 3
5368                                    ;
5369                                    ;
5370                                    ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
5371                                    ;ISSUED WHILE THE TAPE IS POSITIONED AT BOT CAUSES
5372                                    ;FUNCTION REJECT TERMINATION, WITH THE NON-EXECUTABLE
5373                                    ;FUNCTION (NEF) ERROR BIT SET.
5374                                    ;
5375                                    ;
5376                                    ;
5377                                    ;
5378                                    ;
5379                                    ;-
5380 035310                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      035310                                                                                T2.3:
      035310  104402                                                                          TRAP    C$BSUB
5381 035312  004737  041132                    JSR     PC,T3OREST              ;SET COMMAND PACKET
5382 035316  005037  036534                    CLR     T3OFCN                  ;CLEAR FILE COUNTER
5383 035322  004737  041224                    JSR     PC,T3ORT2               ;SET UP OTHER COMMAND PACKET
5384 035326  004737  041266                    JSR     PC,T3ORT3               ;SET UP OTHER COMMAND PACKET
5385 035332  012737  176750  036536            MOV     #65000.,T3ODLY          ;SET UP DELAY COUNTER
5386 035340  004737  016634              10$:  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
5387 035344  103426                          BCS     20$                     ;BR IF INIT WAS OK
5388 035346                                   DELAY   250                     ;DELAY ROUTINE CALL
      035346  012727  000250                                                                MOV     #250,(PC)+
      035352  000000                                                                        .WORD   0
      035354  013727  002116                                                                MOV     L$DLY,(PC)+
      035360  000000                                                                        .WORD   0
      035362  005367  177772                                                                DEC     -6(PC)
      035366  001375                                                                        BNE     .-4
      035370  005367  177756                                                                DEC     -22(PC)
      035374  001367                                                                        BNE     .-20
5389 035376  005337  036536                    DEC     T3ODLY                  ;BUMP COUNTER
5390 035402  001356                          BNE     10$                     ;BR, IF MORE COUNTING TO DO
5391 035404  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5395 035410  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5396 035412                                   ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      035412  104455                                                                        TRAP    C$ERDF
      035414  000353                                                                        .WORD   235
      035416  003550                                                                        .WORD   SFIERR
      035420  011656                                                                        .WORD   SFIMSG
5397 035422                             20$:
5398
5399 035422  012704  036350                    MOV     #T3OPACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5400
5401                                    ;*************************************************************
5402                                    ;
5403                                    ;ISSUE WRITE CHARACTERISTICS COMMAND
5404                                    ;
5405                                    ;*************************************************************
5406
5407 035426  004737  010322                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5408 035432  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
5409 035434  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5413 035440  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
```

```
5414 035442                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     035442  104456                                                                TRAP    C$ERHRD
     035444  000354                                                                .WORD   236
     035446  004754                                                                .WORD   WRTMSG
     035450  011656                                                                .WORD   SFIMSG
5415 035452                     23$:    CKLOOP                          ;LOOP IF SELECTED
     035452  104406                                                                TRAP    C$CLP1
5416
5417                            ;***************************************************************
5418                            ;
5419                            ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5420                            ;
5421                            ;***************************************************************
5422
5423 035454  004737  010424             JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5424 035460  103411                     BCS     30$                     ;BR, IF NO PROBLEM
5425 035462  010004                     MOV     R0,R4                   ;GET PACKET ADDRESS
5426 035464  016501  000000             MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5427 035470  004737  020070             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5431 035474                             ERRHRD  ERRNO,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
     035474  104456                                                                TRAP    C$ERHRD
     035476  000355                                                                .WORD   237
     035500  040120                                                                .WORD   T3ORWN
     035502  011670                                                                .WORD   PKTSSR
5432 035504                     30$:    CKLOOP                          ;LOOP IF SELECTED
     035504  104406                                                                TRAP    C$CLP1
5433
5434                            ;***************************************************************
5435                            ;
5436                            ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5437                            ;
5438                            ;***************************************************************
5439
5440 035506  013701  036376             MOV     T30BFR+6,R1             ;PICK UP XST0
5441 035512  010102                     MOV     R1,R2                   ;SET UP EXPECTED
5442 035514  052702  000002             BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5443 035520  020102                     CMP     R1,R2                   ;DOES EXP = REC'D
5444 035522  001406                     BEQ     40$                     ;BR, IF EQUAL (OK)
5445 035524  004737  020070             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5449 035530                             ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035530  104456                                                                TRAP    C$ERHRD
     035532  000356                                                                .WORD   238
     035534  037721                                                                .WORD   T30BOT
     035536  016334                                                                .WORD   EXPREC
5450 035540                     40$:    CKLOOP                          ;LOOP IF SELECTED
     035540  104406                                                                TRAP    C$CLP1
5451 035542  012737  000001  036502         MOV     #1,T30WB                ;SET # OF TM TO SKIP
5452
5453                            ;***************************************************************
5454                            ;
5455                            ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
5456                            ;
5457                            ;***************************************************************
5458
5459 035550  012737  141410  036500         MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
5460 035556  012704  036500                 MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5461 035562  010465  177776                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

```
 5462 035566  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5463 035572  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5464 035576  012702  100206                  MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
 5465 035602  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 5466 035604  001406                          BEQ     70$                     ;BR, IF OK
 5467 035606  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5471 035612                                  ERRHRD  ERRNO,T30IBT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      035612  104456                                                                  TRAP    C$ERHRD
      035614  000357                                                                  .WORD   239
      035616  036711                                                                  .WORD   T30IBT
      035620  011670                                                                  .WORD   PKTSSR
 5472 035622                          70$:    CKLOOP                          ;LOOP IF SELECTED
      035622  104406                                                                  TRAP    C$CLP1
 5473
 5474                                 ;*****************************************************************
 5475                                 ;
 5476                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
 5477                                 ;
 5478                                 ;*****************************************************************
 5479
 5480 035624  013701  036376                  MOV     T30BFR+6,R1             ;PICK UP XST0
 5481 035630  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 5482 035632  052702  002000                  BIS     #BIT10,R2               ;SET NEF BIT IN EXPECTED
 5483 035636  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 5484 035640  001406                          BEQ     180$                    ;BR, IF EQUAL (OK)
 5485 035642  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5489 035646                                  ERRHRD  ERRNO,T30NEF,EXPREC     ;TAPE NOT AT NEF
      035646  104456                                                                  TRAP    C$ERHRD
      035650  000360                                                                  .WORD   240
      035652  040456                                                                  .WORD   T30NEF
      035654  016334                                                                  .WORD   EXPREC
 5490 035656                          180$:   CKLOOP                          ;LOOP IF SELECTED
      035656  104406                                                                  TRAP    C$CLP1
 5491 035660                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
      035660                                                                  L10046:
      035660  104403                                                                  TRAP    C$ESUB
```

```
5493                                    ;+
5494                                    ;
5495                                    ;TEST 2, SUBTEST 4
5496                                    ;
5497                                    ;
5498                                    ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
5499                                    ;ISSUED WHILE THE TAPE IS POSITIONED JUST BEFORE THE
5500                                    ;FIRST RECORD ON ON TAPE (BUT NOT AT BOT) CAUSES TAPE
5501                                    ;STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT
5502                                    ;(RIB) STATUS BIT SET.
5503                                    ;
5504                                    ;
5505                                    ;
5506                                    ;
5507                                    ;
5508                                    ;-
5509 035662                                    BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      035662                                                                    T2.4:
      035662  104402                                                                TRAP    C$BSUB
5510 035664  004737  041132                    JSR     PC,T3OREST      ;SET COMMAND PACKET
5511 035670  005037  036534                    CLR     T3OFCN          ;CLEAR FILE COUNTER
5512 035674  004737  041224                    JSR     PC,T3ORT2       ;SET UP OTHER COMMAND PACKET
5513 035700  004737  041266                    JSR     PC,T3ORT3       ;SET UP OTHER COMMAND PACKET
5514 035704  012737  176750  036536            MOV     #65000.,T3ODLY  ;SET UP DELAY COUNTER
5515 035712  004737  016634          10$:      JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
5516 035716  103426                            BCS     20$             ;BR IF INIT WAS OK
5517 035720                                     DELAY   250             ;DELAY ROUTINE CALL
      035720  012727  000250                                                    MOV     #250,(PC)+
      035724  000000                                                           .WORD   0
      035726  013727  002116                                                    MOV     L$DLY,(PC)+
      035732  000000                                                           .WORD   0
      035734  005367  177772                                                    DEC     -6(PC)
      035740  001375                                                           BNE     .-4
      035742  005367  177756                                                    DEC     -22(PC)
      035746  001367                                                           BNE     .-20
5518 035750  005337  036536                    DEC     T3ODLY          ;BUMP COUNTER
5519 035754  001356                            BNE     10$             ;BR, IF MORE COUNTING TO DO
5520 035756  004737  020070                    JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
5524 035762  010001                            MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
5525 035764                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      035764  104455                                                           TRAP    C$ERDF
      035766  000361                                                           .WORD   241
      035770  003550                                                           .WORD   SFIERR
      035772  011656                                                           .WORD   SFIMSG
5526 035774                          20$:
5527
5528 035774  012704  036350                    MOV     #T3OPACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
5529
5530                                    ;*****************************************************************
5531                                    ;
5532                                    ;ISSUE WRITE CHARACTERISTICS COMMAND
5533                                    ;
5534                                    ;*****************************************************************
5535
5536 036000  004737  010322                    JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
5537 036004  103407                            BCS     23$             ;BR, IF COMMAND ISSUED OK
5538 036006  004737  020070                    JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
```

```
5542 036012  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5543 036014                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     036014  104456                                                            TRAP    C$ERHRD
     036016  000362                                                            .WORD   242
     036020  004754                                                            .WORD   WRTMSG
     036022  011656                                                            .WORD   SFIMSG
5544 036024                    23$:    CKLOOP                          ;LOOP IF SELECTED
     036024  104406                                                            TRAP    C$CLP1
5545
5546                           ;*************************************************************
5547                           ;
5548                           ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5549                           ;
5550                           ;*************************************************************
5551
5552 036026  004737  010424            JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5553 036032  103411                    BCS     30$                     ;BR, IF NO PROBLEM
5554 036034  010004                    MOV     R0,R4                   ;GET PACKET ADDRESS
5555 036036  016501  000000            MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5556 036042  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5560 036046                            ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     036046  104456                                                            TRAP    C$ERHRD
     036050  000363                                                            .WORD   243
     036052  040120                                                            .WORD   T30RWN
     036054  011670                                                            .WORD   PKTSSR
5561 036056                    30$:    CKLOOP                          ;LOOP IF SELECTED
     036056  104406                                                            TRAP    C$CLP1
5562
5563                           ;*************************************************************
5564                           ;
5565                           ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5566                           ;
5567                           ;*************************************************************
5568
5569 036060  013701  036376            MOV     T30BFR+6,R1             ;PICK UP XST0
5570 036064  010102                    MOV     R1,R2                   ;SET UP EXPECTED
5571 036066  052702  000002            BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5572 036072  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
5573 036074  001406                    BEQ     40$                     ;BR, IF EQUAL (OK)
5574 036076  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5578 036102                            ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     036102  104456                                                            TRAP    C$ERHRD
     036104  000364                                                            .WORD   244
     036106  037721                                                            .WORD   T30BOT
     036110  016334                                                            .WORD   EXPREC
5579 036112                    40$:    CKLOOP                          ;LOOP IF SELECTED
     036112  104406                                                            TRAP    C$CLP1
5580 036114  013737  003072  036502      MOV     FREE,T30WB              ;SET UP GOOD WRITE BUFFER
5581 036122  012737  000400  036506      MOV     #256.,T30SZ             ;SET UP SIZE
5582
5583                           ;*************************************************************
5584                           ;
5585                           ;WRITE DATA,ACK,CVC=1 COMMAND
5586                           ;
5587                           ;*************************************************************
5588
5589 036130  012737  140005  036500      MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
```

```
5590 036136  012704  036500                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5591 036142  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5592 036146  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5593 036152  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5594 036156  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
5595 036162  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5596 036164  001406                          BEQ     70$                     ;BR, IF OK
5597 036166  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5601                                                                         ;SOFT ERROR, DON'T CARE ABOUT WRITE
5602                                                                         ;COMMAND'S RESULTS - CHECKING SKIP
5603                                                                         ;TAPE MARK COMMAND
5604 036172                                  ERRSOFT ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     036172  104457                                                                 TRAP    C$ERSOFT
     036174  000365                                                                 .WORD   245
     036176  037050                                                                 .WORD   T30WDD
     036200  011670                                                                 .WORD   PKTSSR
5605 036202                          70$:    CKLOOP                          ;LOOP IF SELECTED
     036202  104406                                                                 TRAP    C$CLP1
5606
5607                                 ;*****************************************************************
5608                                 ;
5609                                 ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
5610                                 ;
5611                                 ;*****************************************************************
5612
5613 036204  012737  000001  036502          MOV     #1,T30WB                ;# OF TM TO SKIP
5614 036212  012737  141410  036500          MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
5615 036220  012704  036500                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5616 036224  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5617 036230  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5618 036234  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
5619 036240  012702  100204                  MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED (SSR AND SC ONLY)
5620 036244  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
5621 036246  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
5622 036250  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5626 036254                                  ERRHRD  ERRNO,T301BU,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     036254  104456                                                                 TRAP    C$ERHRD
     036256  000366                                                                 .WORD   246
     036260  036540                                                                 .WORD   T301BU
     036262  011670                                                                 .WORD   PKTSSR
5627 036264                          160$:   CKLOOP                          ;LOOP IF SELECTED
     036264  104406                                                                 TRAP    C$CLP1
5628
5629                                 ;*****************************************************************
5630                                 ;
5631                                 ;GET EXTENDED STATUS REGISTER ZERO (XST3) FROM MESSAGE BUFFER
5632                                 ;
5633                                 ;*****************************************************************
5634
5635 036266  013701  036404                  MOV     T30BFR+14,R1            ;PICK UP XST3
5636 036272  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5637 036274  052702  000001                  BIS     #BIT0,R2                ;SET RIB BIT IN EXPECTED
5638 036300  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5639 036302  001406                          BEQ     170$                    ;BR, IF EQUAL (OK)
5640 036304  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5644 036310                                  ERRHRD  ERRNO,T30RIB,EXPREC     ;TAPE NOT AT RIB
     036310  104456                                                                 TRAP    C$ERHRD
```

```
                036312  000367                                                          .WORD   247
                036314  036625                                                          .WORD   T30RIB
                036316  016334                                                          .WORD   EXPREC
   5645         036320                          170$:   CKLOOP                  ;LOOP IF SELECTED
                036320  104406                                                          TRAP    C$CLP1
   5646         036322                                  ENDSUB                  ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
                036322                                                                  L10047:
                036322  104403                                                          TRAP    C$ESUB
   5647                                         ;SUBTEST END
   5648                                         ;
   5649                                         ;
   5650         036324  004737  017344                  JSR     PC,TSTLOOP      ;DO WE NEED TO ITERATE TEST
   5651         036330  103002                          BCC     400$            ;BR, IF NO LOOP REQUIRED
   5652         036332  000137  032352                  JMP     T30LOOP         ;EXECUTE AGAIN
   5653         036336                          400$:   EXIT    TST             ;ALL DONE THIS TEST
                036336  104432                                                          TRAP    C$EXIT
                036340  002750                                                          .WORD   L10043-.
```

```
5655                                    ;+
5656                                    ;LOCAL STORAGE FOR THIS TEST
5657                                    ;-
5659 036342                                     .BLKB   10-<.-TUV2A&7>
5661 036350                             T30PACKET:                      ;COMMAND PACKET FOR TEST
5662 036350  100004                             .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
5663 036352  036360                             .WORD   T30DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
5664 036354  000000                             .WORD   0
5665 036356  000012                             .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
5666 036360                             T30DATA:                        ;CHARACTERISTICS DATA BLOCK
5667 036360  036370                             .WORD   T30BFR          ;ADDRESS OF MESSAGE BUFFER
5668 036362  000000                             .WORD   0
5669 036364  000024                             .WORD   20.             ;LENGTH OF MESSAGE BUFFER
5670 036366  000000                     T30ETM: .WORD   0               ;SKIP TAPE MARK CONTROL
5671 036370                             T30BFR: .BLKW   25.             ;MESSAGE BUFFER
5672                                    ;
5673                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
5674                                    ;
5676 036452                                     .BLKB   10-<.-TUV2A&7>
5678 036460                             T30PK2:
5679 036460  100006                             .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
5680 036462  036510                             .WORD   T30BF2          ;ADDRESS OF SELECT BLOCK DATA
5681 036464  000000                             .WORD   0
5682 036466  000006                             .WORD   6.              ;SIZE OF DATA PACKET
5684 036470                                     .BLKB   10-<.-TUV2A&7>
5686 036500                             T30PK3:
5687 036500  100205                             .WORD   100205          ;REREAD COMMAND, IE AND ACK
5688 036502                             T30RB:
5689 036502  003072                     T30WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
5690 036504  000000                             .WORD   0
5691 036506  000000                     T30SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
5692                                            .EVEN
5693                                    ;
5694 036510                             T30BF2:
5695 036510     010                     T30BS0: .BYTE   10              ;BSEL0 AREA
5696 036511     200                     T30BS1: .BYTE   200             ;BSEL1 AREA
5697 036512  000000                     T30S2:  .WORD   0               ;SEL 2 AREA
5698 036514  000000                     T30S3:  .WORD   0               ;DATA AREA
5699                                    ;
5700                                            .EVEN
5701                                    ;TAPE MOTION PACKET COMMAND VALUES
5702 036516                             T30IMV:
5703 036516                             T30RN:
5704 036516  000000                             .WORD   000000          ;NEITHER EWB NOR ESS
5705 036520  000100                             .WORD   000100          ;EWB SET
5706 036522  000200                             .WORD   000200          ;ESS SET
5707 036524  000300                             .WORD   000300          ;BOTH EWB AND ESS SET
5708 036526  177777                             .WORD   177777          ;END OF DATA
5709                                    ;
5710 036530  000000                     T30CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
5711 036532  000000                     T30CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
5712 036534  000000                     T30FCN: .WORD   0               ;FILE NUMBER COUNTER
5713 036536  000000                     T30DLY: .WORD   0               ;DELAY COUNTER STORAGE
```

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

036540  124  123  123  T30IBU: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Into BOT'
036625  122  111  102  T30RIB: .ASCIZ  'RIB Bit (XST3) Failed To Set After Reverse Into BOT'
036711  124  123  123  T30IBT: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At BOT'
036774  124  123  123  T30SKM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK Command'
037050  124  123  123  T30WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
037122  124  141  160  T30PTB: .ASCIZ  'Tape Not Positioned On Correct Record After READ REVERSE'
037213  124  141  160  T30TPB: .ASCIZ  'Tape Not Positioned On Second File First Record'
037273  124  123  123  T30RDF: .ASCIZ  'TSSR Incorrect After READ FORWARD Into "File"'
037351  124  123  123  T30RDG: .ASCIZ  'TSSR Incorrect After SPACE Command Into TAPE MARK'
037433  124  123  123  T30WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
037510  111  154  154  T30LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
037571  127  122  111  T30SSR: .ASCIZ  'WRITE MISCELLANEOUS Command Not Accepted'
037642  124  123  123  T30WDE: .ASCIZ  'TSSR Not Correct After SKIP TAPE MARKS, At BOT'
037721  124  141  160  T30BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
037766  124  123  123  T30TM:  .ASCIZ  'TSSR Not Correct After SPACE FORWARD Command'
040043  124  123  123  T30TM2: .ASCIZ  'TSSR Not Correct After SPACE REVERSE Command'
040120  122  145  167  T30RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
040167  104  162  151  T30OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
040242  124  123  123  T30WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK Command'
040321  103  126  103  T30VCK: .ASCIZ  'CVC Set, Didn't Reset VCK In Message Buffer'
040374  124  115  113  T30TMK: .ASCIZ  'TMK Not Set After WRITE TAPE MARK (RETRY) Command'
040456  123  113  111  T30NEF: .ASCIZ  'SKIP TAPE MARKS, At BOT, Failed To Set NEF Bit'
040535  124  115  113  T30RRM: .ASCIZ  'TMK Not Set After READ REVERSE Into TAPE MARK'
040613  124  115  113  T30RRN: .ASCIZ  'TMK Not Set After SPACE REVERSE Into TAPE MARK'
040672  124  115  113  T30RRP: .ASCIZ  'TMK Not Set After READ FORWARD Into TAPE MARK'
040750  116  117  040  T30DTR: .ASCIZ  'NO Data Transferred On READ FORWARD'
041014  104  141  164  T30DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
041111  123  153  151  TST30ID:        .ASCIZ  'Skip Tape Marks'
                              .EVEN
                        ;+
                        ;
                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                        ;WRITE SUBSYSTEM MEMORY COMMAND
                        ;
                        ;-

041132                  T30REST:
041132                        SAVREG                          ;SAVE THE REGISTERS
041136  012701  036350          MOV     #T30PACKET,R1         ;START OF THE PACKET
041142  012721  100004          MOV     #100004,(R1)+         ;WRITE SUBSYSTEM MEM. WITH ACK,
041146  012721  036360          MOV     #T30DATA,(R1)+        ;ADDRESS OF CHARAISTICS DATA BLOCK
041152  005021                  CLR     (R1)+                 ;EXTENDED ADDRESS
041154  012721  000012          MOV     #10.,(R1)+            ;SIZE OF DATA BLOCK IN BYTES
041160  012721  036370          MOV     #T30BFR,(R1)+         ;ADDRESS OF MESSAGE BUFFER
041164  005021                  CLR     (R1)+
041166  012721  000024          MOV     #20.,(R1)+            ;LENGTH OF MESSAGE BUFFER
041172  005021                  CLR     (R1)+
041174  012711  000000          MOV     #0,(R1)               ;SELECT DRIVE ZERO
041200  012702  000030          MOV     #24.,R2               ;NUMBER OF LOCATIONS TO BE CLEARED
041204  012762  177777  036370  64$:    MOV     #177777,T30BFR(R2)    ;ALL ONES TO MESSAGE BUFFER
041212  005742                  TST     -(R2)                 ;NEXT LOCATION
041214  022702  000000          CMP     #0.,R2                        ;CHECK R2 FOR DONE
```

```
5772 041220  001371                        BNE     64$                     ;KEEP GOING UNTIL DONE
5773 041222  000207                        RTS     PC                      ;RETURN
5774
5775
5776 041224                        T30RT2:
5777 041224                                SAVREG                          ;SAVE THE REGISTERS
5778 041230  012701  036460                MOV     #T30PK2,R1              ;START OF THE PACKET
5779 041234  012721  100006                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
5780 041240  012721  036510                MOV     #T30BF2,(R1)+           ;ADDRESS OF DATA BLOCK
5781 041244  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
5782 041246  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
5783 041252  005021                        CLR     (R1)+
5784 041254  012701  036510                MOV     #T30BF2,R1              ;POINT TO DATA SEL AREA
5785 041260  005021                        CLR     (R1)+
5786 041262  005011                        CLR     (R1)
5787 041264  000207                        RTS     PC                      ;RETURN
5788 041266                        T30RT3:
5789 041266                                SAVREG                          ;SAVE REGISTERS
5790 041272  012701  036500                MOV     #T30PK3,R1              ;SET UP POINTER ADDRESS
5791 041276  005021                        CLR     (R1)+                   ;COMMAND SPACE
5792 041300  005021                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
5793 041302  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
5794 041304  005011                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
5795 041306  000207                        RTS     PC                      ;RETURN
5796 041310                                ENDTST
                                                                  L10043:
     041310                                                               TRAP    C$ETST
     041310  104401
```

```
                                        .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
                                ;
                                ;
                                ;
                                ;-
041312                                  BGNTST
041312                                                                          T3::
041312  005037  002170                 CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
041316  005037  003100                 CLR     KTFLG                   ;HOLD OFF KT11
041322  012737  005672  002146         MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
041330  012700  046403                 MOV     #TST31ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
041334  004737  017376                 JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
041340  012737  000002  002164         MOV     #2,LOOPCNT              ;PERFORM 2 ITERATIONS
041346  005037  043176                 CLR     T31CNT                  ;CLEAR TAPE RECORD COUNTER
                                ;
                                ;-
041352                          T31LOOP:
```

```
 5827                                   ;+
 5828                                   ;
 5829                                   ;TEST 3, SUBTEST 1
 5830                                   ;
 5831                                   ;       VERIFIES THAT THE NO-OP COMMAND (CORRESPONDS TO THE CLEAN TAPE
 5832                                   ;       COMMAND) TERMINATES PROPERLY (NORMAL TERMINATION), STORES PROPER
 5833                                   ;       STATUS IN THE MESSAGE BUFFER (LIKE THE GET STATUS COMMAND), AND
 5834                                   ;       INDEED DOES NOT MOVE TAPE.  THE TAPE IS FIRST REWOUND AND
 5835                                   ;       WRITTEN WITH SEQUENCED TEST RECORDS.  IT IS THEN REWOUND AGAIN
 5836                                   ;       AND THE NO-OP COMMAND IS ISSUED.  IT IS VERIFIED THAT THE TAPE
 5837                                   ;       IS STILL AT BOT AND THAT PROPER STATUS IS STORED.  THE FIRST
 5838                                   ;       RECORD ON TAPE IS READ AND VERIFIED (TO CHECK TAPE POSITION AND
 5839                                   ;       VERIFY THAT DATA WAS NOT CHANGED), THEN THE NO-OP COMMAND IS
 5840                                   ;       ISSUED AGAIN AND STATUS AND POSITION VERIFIED.
 5841                                   ;
 5842                                   ;
 5843                                   ;
 5844                                   ;
 5845                                   ;
 5846                                   ;
 5847                                   ;-
 5848 041352                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      041352                                                                                    T3.1:
      041352  104402                                                                              TRAP    C$BSUB
 5849 041354  004737  046450                    JSR     PC,T31REST              ;SET COMMAND PACKET
 5850 041360  004737  046542                    JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
 5851 041364  004737  046604                    JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
 5852 041370  012737  176750  043202            MOV     #65000.,T31DLY          ;SET UP DELAY COUNTER
 5853 041376  004737  016634             10$:   JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 5854 041402  103426                            BCS     20$                     ;BR IF INIT WAS OK
 5855 041404                                    DELAY   250                     ;DELAY ABOUT .25 SEC
      041404  012727  000250                                                                   MOV     #250.,(PC)+
      041410  000000                                                                           .WORD   0
      041412  013727  002116                                                                   MOV     L$DLY,(PC)+
      041416  000000                                                                           .WORD   0
      041420  005367  177772                                                                   DEC     -6(PC)
      041424  001375                                                                           BNE     .-4
      041426  005367  177756                                                                   DEC     -22(PC)
      041432  001367                                                                           BNE     .-20
 5856 041434  005337  043202                    DEC     T31DLY                  ;BUMP COUNTER
 5857 041440  001356                            BNE     10$                     ;BR, IF COUNTER NOT DONE
 5858 041442  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5862 041446  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 5863 041450                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      041450  104455                                                                           TRAP    C$ERDF
      041452  000455                                                                           .WORD   301
      041454  003550                                                                           .WORD   SFIERR
      041456  011656                                                                           .WORD   SFIMSG
 5864 041460                             20$:
 5865 041460  012704  043020                    MOV     #T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 5866 041464  004737  010322                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 5867 041470  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
 5868 041472  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5872 041476  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 5873 041500                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      041500  104456                                                                           TRAP    C$ERHRD
      041502  000456                                                                           .WORD   302
```

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                041504  004754                                                  .WORD   WRTMSG
                041506  011656                                                  .WORD   SFIMSG
     5874       041510                  23$:    CKLOOP                          ;LOOP IF SELECTED
                041510  104406                                                  TRAP    C$CLP1
     5875       041512  004737  010424          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
     5876       041516  103407          BCS     30$                             ;BR, IF NO PROBLEM
     5877       041520  010004          MOV     R0,R4                           ;SET UP REWIND PACKET ADDRESS
     5878       041522  004737  020070          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     5882       041526                  ERRHRD  ERRNO,T31RWN,PKTSSR             ;REWIND NOT ACCEPTED
                041526  104456                                                  TRAP    C$ERHRD
                041530  000457                                                  .WORD   303
                041532  044534                                                  .WORD   T31RWN
                041534  011670                                                  .WORD   PKTSSR
     5883       041536                  30$:    CKLOOP                          ;LOOP IF SELECTED
                041536  104406                                                  TRAP    C$CLP1
     5884       041540  013701  043046          MOV     T31BFR+6,R1             ;PICK UP XSTO
     5885       041544  010102          MOV     R1,R2                           ;SET UP EXPECTED
     5886       041546  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
     5887       041552  020102          CMP     R1,R2                           ;DOES EXP = REC'D
     5888       041554  001406          BEQ     40$                             ;BR, IF EQUAL (OK)
     5889       041556  004737  020070          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     5893       041562                  ERRHRD  ERRNO,T31BOT,EXPREC             ;TAPE NOT AT BOT AFTER REWIND
                041562  104456                                                  TRAP    C$ERHRD
                041564  000460                                                  .WORD   304
                041566  044205                                                  .WORD   T31BOT
                041570  016334                                                  .WORD   EXPREC
     5894       041572                  40$:    CKLOOP                          ;LUOP IF SELECTED
                041572  104406                                                  TRAP    C$CLP1
     5895       041574  013737  003072  043152  MOV     FREE,T31WB              ;STARTING WRITE BUFFER ADDRESS
     5896       041602  012737  140005  043150  65$:    MOV     #140005,T31PK3  ;WRITE DATA,CVC=1,ACK COMMAND
     5897       041610  012704  043150          MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
     5898       041614  012700  000144          MOV     #100.,R0                ;SET PATTERN IN CORRECT REGISTER
     5899       041620  004737  020362          JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
     5900       041624  012737  000144  043156  MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
     5901       041632  010465  177776          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
     5902       041636  004737  017110          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
     5903       041642  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
     5904       041646  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
     5905       041652  020102          CMP     R1,R2                           ;ARE THEY EQUAL
     5906       041654  001406          BEQ     80$                             ;BR, IF OK
     5907       041656  004737  020070          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     5911                                                                       ;SOFT ERROR, DON'T CARE ABOUT WRITE
     5912                                                                       ;COMMAND'S RESULTS - CHECKING
     5913                                                                       ;NO-OP COMMAND
     5914       041662                  ERRSOFT ERRNO,T31WDC,PKTSSR             ;TSSR INCORRECT AFTER WRITE DATA
                041662  104457                                                  TRAP    C$ERSOFT
                041664  000461                                                  .WORD   305
                041666  045070                                                  .WORD   T31WDC
                041670  011670                                                  .WORD   PKTSSR
     5915       041672                  80$:    CKLOOP                          ;LOOP IF SELECTED
                041672  104406                                                  TRAP    C$CLP1
     5916       041674  004737  010424          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
     5917       041700  103407          BCS     230$                            ;BR, IF NO PROBLEM
     5918       041702  010001          MOV     R0,R1                           ;SAVE TSSR
     5919       041704  004737  020070          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     5923       041710                  ERRHRD  ERRNO,T31RWN,EXPREC             ;REWIND NOT ACCEPTED
                041710  104456                                                  TRAP    C$ERHRD
```

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                041712  000462                                                          .WORD   306
                041714  044534                                                          .WORD   T31RWN
                041716  016334                                                          .WORD   EXPREC
5924            041720                          230$:   CKLOOP                          ;LOOP IF SELECTED
                041720  104406                                                          TRAP    C$CLP1
5925            041722  013701  043046                  MOV     T31BFR+6,R1             ;PICK UP XSTO
5926            041726  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5927            041730  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5928            041734  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5929            041736  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
5930            041740  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5934            041744                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                041744  104456                                                          TRAP    C$ERHRD
                041746  000463                                                          .WORD   307
                041750  044205                                                          .WORD   T31BOT
                041752  016334                                                          .WORD   EXPREC
5935            041754                          240$:   CKLOOP                          ;LOOP IF SELECTED
                041754  104406                                                          TRAP    C$CLP1
5936            041756  012737  041012  043150  265$:   MOV     #041012,T31PK3          ;NO-OP,CVC=1 COMMAND
5937            041764  012704  043150                  MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5938            041770  010337  043156                  MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
5939            041774  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5940            042000  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5941            042004  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5942            042010  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
5943            042014  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5944            042016  001406                          BEQ     280$                    ;BR, IF OK
5945            042020  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5949            042024                                  ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
                042024  104456                                                          TRAP    C$ERHRD
                042026  000464                                                          .WORD   308
                042030  043403                                                          .WORD   T31RDF
                042032  011670                                                          .WORD   PKTSSR
5950            042034                          280$:   CKLOOP                          ;LOOP IF SELECTED
                042034  104406                                                          TRAP    C$CLP1
5951            042036  013701  043046                  MOV     T31BFR+6,R1             ;PICK UP XSTO
5952            042042  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5953            042044  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5954            042050  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5955            042052  001406                          BEQ     285$                    ;BR, IF EQUAL (OK)
5956            042054  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5960            042060                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                042060  104456                                                          TRAP    C$ERHRD
                042062  000465                                                          .WORD   309
                042064  044205                                                          .WORD   T31BOT
                042066  016334                                                          .WORD   EXPREC
5961            042070                          285$:   CKLOOP                          ;LOOP IF SELECTED
                042070  104406                                                          TRAP    C$CLP1
5962            042072  012737  140001  043150          MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
5963            042100  012704  043150                  MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5964            042104  012737  000144  043156          MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
5965            042112  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5966            042116  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5967            042122  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5968            042126  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
5969            042132  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5970            042134  001406                          BEQ     290$                    ;BR, IF OK
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 5971 042136  004737  020070                 JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5975 042142                                 ERRHRD  ERRNO,T31RDE,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
      042142  104456                                                                 TRAP    C$ERHRD
      042144  000466                                                                 .WORD   310
      042146  043204                                                                 .WORD   T31RDE
      042150  011670                                                                 .WORD   PKTSSR
 5976 042152                         290$:   CKLOOP                           ;LOOP IF SELECTED
      042152  104406                                                                 TRAP    C$CLP1
 5977 042154  017701  140712                 MOV     @FREE,R1                 ;GET DATA READ
 5978 042160  012702  000144                 MOV     #100.,R2                 ;READ EXPECTED
 5979 042164  020102                         CMP     R1,R2                    ;DID TAPE STAY POSITIONED
 5980 042166  001406                         BEQ     330$                     ;BR, IF EXPD = RECD
 5981 042170  004737  020070                 JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5985 042174                                 ERRHRD  ERRNO,T31WNG,EXPREC      ;TAPE DATA NOT CORRECT
      042174  104456                                                                 TRAP    C$ERHRD
      042176  000467                                                                 .WORD   311
      042200  043331                                                                 .WORD   T31WNG
      042202  016334                                                                 .WORD   EXPREC
 5986 042204                         330$:
 5987 042204                                 ENDSUB                           ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      042204                                                                     L10051:
      042204  104403                                                                 TRAP    C$ESUB
```

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                                        ;*
                                        ;
                                        ;TEST 3, SUBTEST 2
                                        ;
                                        ;       VERIFIES THAT THE INITIALIZE COMMAND OPERATES AS A NO-OP,
                                        ;       ASSUMING NO MICRODIAGNOSTIC ERRORS ARE PRESENT (THEY WOULD
                                        ;       ALREADY HAVE BEEN DETECTED IN PREVIOUS TESTS).  THE TEST
                                        ;       SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
                                        ;
                                        ;
                                        ;-
042206                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                                T3.2:
042206  104402                                                                                    TRAP    C$BSUB
042210  004737  046450                        JSR     PC,T31REST              ;SET COMMAND PACKET
042214  004737  046542                        JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
042220  004737  046604                        JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
042224  004737  016634                        JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
042230  103407                              BCS     20$                     ;BR IF INIT WAS OK
042232  004737  020070                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042236  010001                              MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
042240                                      ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
042240  104455                                                                                    TRAP    C$ERDF
042242  000470                                                                                    .WORD   312
042244  003550                                                                                    .WORD   SFIERR
042246  011656                                                                                    .WORD   SFIMSG
042250                                  20$:
042250  012704  043020                      MOV     #T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
042254  004737  010322                      JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
042260  103407                              BCS     23$                     ;BR, IF COMMAND ISSUED OK
042262  004737  020070                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042266  010001                              MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
042270                                      ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
042270  104456                                                                                    TRAP    C$ERHRD
042272  000471                                                                                    .WORD   313
042274  004754                                                                                    .WORD   WRTMSG
042276  011656                                                                                    .WORD   SFIMSG
042300                                  23$:    CKLOOP                          ;LOOP IF SELECTED
042300  104406                                                                                    TRAP    C$CLP1
042302  004737  010424                      JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
042306  103407                              BCS     30$                     ;BR, IF NO PROBLEM
042310  010004                              MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
042312  004737  020070                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042316                                      ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
042316  104456                                                                                    TRAP    C$ERHRD
042320  000472                                                                                    .WORD   314
042322  044534                                                                                    .WORD   T31RWN
042324  011670                                                                                    .WORD   PKTSSR
042326                                  30$:    CKLOOP                          ;LOOP IF SELECTED
042326  104406                                                                                    TRAP    C$CLP1
042330  013701  043046                      MOV     T31BFR+6,R1             ;PICK UP XSTO
042334  010102                              MOV     R1,R2                   ;SET UP EXPECTED
042336  052702  000002                      BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
042342  020102                              CMP     R1,R2                   ;DOES EXP = REC'D
042344  001406                              BEQ     40$                     ;BR, IF EQUAL (OK)
```

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 6039 042346  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6043 042352                                    ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042352  104456                                                            TRAP    C$ERHRD
      042354  000473                                                            .WORD   315
      042356  044205                                                            .WORD   T31BOT
      042360  016334                                                            .WORD   EXPREC
 6044 042362                            40$:     CKLOOP                         ;LOOP IF SELECTED
      042362  104406                                                            TRAP    C$CLP1
 6045 042364  013737  003072  043152             MOV     FREE,T31WB              ;STARTING WRITE BUFFER ADDRESS
 6046 042372  012737  140005  043150  65$:      MOV     #140005,T31PK3          ;WRITE DATA,CVC=1,ACK COMMAND
 6047 042400  012704  043150                     MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6048 042404  012700  000144                     MOV     #100.,R0                ;SET PATTERN IN CORRECT REGISTER
 6049 042410  004737  020362                     JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 6050 042414  012737  000144  043156             MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
 6051 042422  010465  177776                     MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6052 042426  004737  017110                     JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6053 042432  016501  000000                     MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6054 042436  012702  000200                     MOV     #SSR,R2                 ;SET UP EXPECTED
 6055 042442  020102                             CMP     R1,R2                   ;ARE THEY EQUAL
 6056 042444  001406                             BEQ     80$                     ;BR, IF OK
 6057 042446  004737  020070                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6061                                                                            ;SOFT ERROR, DON'T CARE ABOUT WRITE
 6062                                                                            ;COMMAND'S RESULTS - CHECKING
 6063                                                                            ;THE INITIALIZE COMMAND
 6064 042452                                    ERRSOFT ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      042452  104457                                                            TRAP    C$ERSOFT
      042454  000474                                                            .WORD   316
      042456  045070                                                            .WORD   T31WDC
      042460  011670                                                            .WORD   PKTSSR
 6065 042462                            80$:     CKLOOP                         ;LOOP IF SELECTED
      042462  104406                                                            TRAP    C$CLP1
 6066 042464  004737  010424                     JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 6067 042470  103407                             BCS     230$                    ;BR, IF NO PROBLEM
 6068 042472  010001                             MOV     R0,R1                   ;SAVE TSSR
 6069 042474  004737  020070                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6073 042500                                    ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
      042500  104456                                                            TRAP    C$ERHRD
      042502  000475                                                            .WORD   317
      042504  044534                                                            .WORD   T31RWN
      042506  016334                                                            .WORD   EXPREC
 6074 042510                            230$:    CKLOOP                         ;LOOP IF SELECTED
      042510  104406                                                            TRAP    C$CLP1
 6075 042512  013701  043046                     MOV     T31BFR+6,R1             ;PICK UP XSTO
 6076 042516  010102                             MOV     R1,R2                   ;SET UP EXPECTED
 6077 042520  052702  000002                     BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 6078 042524  020102                             CMP     R1,R2                   ;DOES EXP = REC'D
 6079 042526  001406                             BEQ     240$                    ;BR, IF EQUAL (OK)
 6080 042530  004737  020070                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6084 042534                                    ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042534  104456                                                            TRAP    C$ERHRD
      042536  000476                                                            .WORD   318
      042540  044205                                                            .WORD   T31BOT
      042542  016334                                                            .WORD   EXPREC
 6085 042544                            240$:    CKLOOP                         ;LOOP IF SELECTED
      042544  104406                                                            TRAP    C$CLP1
 6086 042546  012737  041012  043150  265$:      MOV     #041012,T31PK3          ;INITIALIZE,CVC=1 COMMAND
 6087 042554  012704  043150                     MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
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 6088 042560  010337  043156                MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
 6089 042564  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6090 042570  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6091 042574  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6092 042600  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 6093 042604  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6094 042606  001406                        BEQ     280$                    ;BR, IF OK
 6095 042610  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6099 042614                                ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      042614  104456                                                                TRAP    C$ERHRD
      042616  000477                                                                .WORD   319
      042620  043403                                                                .WORD   T31RDF
      042622  011670                                                                .WORD   PKTSSR
 6100 042624                        280$:   CKLOOP                          ;LOOP IF SELECTED
      042624  104406                                                                TRAP    C$CLP1
 6101 042626  013701  043046                MOV     T31BFR+6,R1             ;PICK UP XSTO
 6102 042632  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 6103 042634  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 6104 042640  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 6105 042642  001406                        BEQ     285$                    ;BR, IF EQUAL (OK)
 6106 042644  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6110 042650                                ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042650  104456                                                                TRAP    C$ERHRD
      042652  000500                                                                .WORD   320
      042654  044205                                                                .WORD   T31BOT
      042656  016334                                                                .WORD   EXPREC
 6111 042660                        285$:   CKLOOP                          ;LOOP IF SELECTED
      042660  104406                                                                TRAP    C$CLP1
 6112 042662  012737  140001  043150        MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
 6113 042670  012704  043150                MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6114 042674  012737  000144  043156        MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
 6115 042702  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6116 042706  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6117 042712  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6118 042716  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 6119 042722  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6120 042724  001406                        BEQ     290$                    ;BR, IF OK
 6121 042726  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6125 042732                                ERRHRD  ERRNO,T31RDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      042732  104456                                                                TRAP    C$ERHRD
      042734  000501                                                                .WORD   321
      042736  043204                                                                .WORD   T31RDE
      042740  011670                                                                .WORD   PKTSSR
 6126 042742                        290$:   CKLOOP                          ;LOOP IF SELECTED
      042742  104406                                                                TRAP    C$CLP1
 6127 042744  017701  140122                MOV     @FREE,R1                ;GET DATA READ
 6128 042750  012702  000144                MOV     #100.,R2                ;READ EXPECTED
 6129 042754  020102                        CMP     R1,R2                   ;DID TAPE STAY POSITIONED
 6130 042756  001406                        BEQ     330$                    ;BR, IF EXPD = RECD
 6131 042760  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6135 042764                                ERRHRD  ERRNO,T31WNH,EXPREC     ;TAPE POSITION NOT CORRECT AFTER INIT
      042764  104456                                                                TRAP    C$ERHRD
      042766  000502                                                                .WORD   322
      042770  043250                                                                .WORD   T31WNH
      042772  016334                                                                .WORD   EXPREC
 6136 042774                        330$:
 6137 042774                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
```

```
        042774                                                           L10052:
        042774  104403                                                           TRAP    C$ESUB
   6138                                  ;
   6139                                  ;
   6140                                  ;
   6141 042776  004737  017344                  JSR     PC,TSTLOOP         ;DO WE NEED TO ITERATE TEST
   6142 043002  103002                          BCC     163$               ;BR, IF NO LOOP REQUIRED
   6143 043004  000137  041352                  JMP     T31LOOP            ;EXECUTE AGAIN
   6144 043010                          163$:   EXIT    TST                ;ALL DONE THIS TEST
        043010  104432                                                           TRAP    C$EXIT
        043012  003614                                                           .WORD   L10050-.
```

```
                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
                                        .BLKB   10-<.-TUV2A87>
                                T31PACKET:                              ;COMMAND PACKET FOR TEST
                                        .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
                                        .WORD   T31DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
                                        .WORD   0
                                        .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
                                T31DATA:                                ;CHARACTERISTICS DATA BLOCK
                                        .WORD   T31BFR                  ;ADDRESS OF MESSAGE BUFFER
                                        .WORD   0
                                        .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
                                        .WORD   0
                                T31BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
                                        .BLKB   10-<.-TUV2A87>
                                T31PK2:
                                        .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
                                        .WORD   T31BF2                  ;ADDRESS OF SELECT BLOCK DATA
                                        .WORD   0
                                        .WORD   6.                      ;SIZE OF DATA PACKET

                                        .BLKB   10-<.-TUV2A87>
                                T31PK3:
                                        .WORD   100005                  ;REREAD COMMAND, AND ACK
                                T31RB:
                                T31WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
                                        .WORD   0
                                T31SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                        .EVEN
                                ;
                                ;
                                ;
                                T31BF2:
                                T31BS0: .BYTE   10                      ;BSEL0 AREA
                                T31BS1: .BYTE   200                     ;BSEL1 AREA
                                T31S2:  .WORD   0                       ;SEL 2 AREA
                                T31S3:  .WORD   0                       ;DATA AREA
                                ;
                                ;
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

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

                                ;
                                T31CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
                                T31CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
                                T31DLY: .WORD   0                       ;DELAY COUNTER
```

```
6209
6210                                    ;+
6211                                    ;LOCAL TEXT MESSAGES FOR TEST
6212                                    ;-
6213
6214
6215
6216 043204  124  123  123  T31RDE: .ASCIZ  'TSSR Not Correct After READ Command'
6217 043250  124  141  160  T31WNH: .ASCIZ  'Tape Position Incorrect After INITIALIZE Command'
6218 043331  124  141  160  T31WNG: .ASCIZ  'Tape Position Incorrect After NOP Command'
6219 043403  124  123  123  T31RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
6220 043452  122  105  122  T31RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
6221 043547  120  117  123  T31SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
6222 043631  122  111  102  T31LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
6223 043701  124  123  123  T31WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
6224 043756  111  154  154  T31LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
6225 044037  122  105  122  T31SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
6226 044073  124  123  123  T31WDE: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command,At BOT'
6227 044205  124  141  160  T31BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
6228 044300  116  117  055  T31TIM: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE''S Erase Tape Not Long Enough'
6229 044400  122  105  122  T31EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
6230 044457  124  123  123  T31TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
6231 044534  122  145  167  T31RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
6232 044603  122  101  115  T31RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
6233 044656  124  123  123  T31AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
6234 044725  104  162  151  T31OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
6235 045000  124  123  123  T31WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
6236 045070  124  123  123  T31WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
6237 045143  103  126  103  T31VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
6238 045216  124  123  102  T31BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
6239 045271  127  122  111  T31WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
6240 045360  122  145  141  T31LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
6241 045442  122  145  141  T31LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
6242 045524  122  145  163  T31PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
6243 045612  122  145  141  T31TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
6244 045700  116  117  055  T31NEF: .ASCIZ  'NO-OP AND INITIALIZE, At First Record, Failed To Set RIB Bitin XSTAT3'
6245 046021  124  123  123  T31SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
6246 046076  124  123  123  T31TSA: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE, Into BOT'
6247 046203  124  123  123  T31WRF: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command'
6248 046306  104  141  164  T31DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
6249 046403  116  117  055  TST31ID:       .ASCIZ  'NO-OP ("Clean Tape") And INITIALIZE'
6250                                    .EVEN
6251                                    ;+
6252                                    ;
6253                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
6254                                    ;WRITE SUBSYSTEM MEMORY COMMAND
6255                                    ;
6256                                    ;-
6257
6258 046450                          T31REST:
6259 046450                                  SAVREG                          ;SAVE THE REGISTERS
6260 046454  012701  043020                  MOV     #T31PACKET,R1           ;START OF THE PACKET
6261 046460  012721  100004                  MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
6262 046464  012721  043030                  MOV     #T31DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
6263 046470  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
6264 046472  012721  000012                  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
6265 046476  012721  043040                  MOV     #T31BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
```

```
6266 046502 005021                          CLR     (R1)+
6267 046504 012721 000024                   MOV     #20.,(R1)+          ;LENGTH OF MESSAGE BUFFER
6268 046510 005021                          CLR     (R1)+
6269 046512 012711 000000                   MOV     #0.(R1)             ;SELECT DRIVE ZERO
6270 046516 012702 000030                   MOV     #24.,R2             ;NUMBER OF LOCATIONS TO BE CLEARED
6271 046522 012762 177777 043040 64$:       MOV     #177777,T31BFR(R2)  ;ALL ONES TO MESSAGE BUFFER
6272 046530 005742                          TST     -(R2)               ;NEXT LOCATION
6273 046532 022702 000000                   CMP     #0,R2               ;AT END OF LOOP YET
6274 046536 001371                          BNE     64$                 ;KEEP GOING UNTIL DONE
6275 046540 000207                          RTS     PC                  ;RETURN
6276
6277
6278 046542                         T31RT2:
6279 046542                                 SAVREG                      ;SAVE THE REGISTERS
6280 046546 012701 043130                   MOV     #T31PK2,R1          ;START OF THE PACKET
6281 046552 012721 100006                   MOV     #100006,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK,
6282 046556 012721 043160                   MOV     #T31BF2,(R1)+       ;ADDRESS OF DATA BLOCK
6283 046562 005021                          CLR     (R1)+               ;EXTENDED ADDRESS
6284 046564 012721 000006                   MOV     #6.,(R1)+           ;SIZE OF DATA BLOCK IN BYTES
6285 046570 005021                          CLR     (R1)+
6286 046572 012701 043160                   MOV     #T31BF2,R1          ;POINT TO DATA SEL AREA
6287 046576 005021                          CLR     (R1)+
6288 046600 005011                          CLR     (R1)
6289 046602 000207                          RTS     PC                  ;RETURN
6290 046604                         T31RT3:
6291 046604                                 SAVREG                      ;SAVE REGISTERS
6292 046610 012701 043150                   MOV     #T31PK3,R1          ;SET UP POINTER ADDRESS
6293 046614 005021                          CLR     (R1)+               ;COMMAND SPACE
6294 046616 005021                          CLR     (R1)+               ;ADDRESS OF DATA BLOCK
6295 046620 005021                          CLR     (R1)+               ;EXTENDED ADDRESS
6296 046622 005011                          CLR     (R1)                ;SIZE OF DATA TRANSFER BLOCK
6297 046624 000207                          RTS     PC                  ;RETURN
6298 046626                                 ENDTST
     046626                                                     L10050:
     046626 104401                                                  TRAP    C$ETST
```

```
                                .SBTTL  TEST  4: Erase And Operation Incomplete
                        ;+
                        ;       VERIFIES THAT AN ERASE COMMAND ISSUED WHEN THE TAPE IS
                        ;       POSITIONED AT BOT OPERATES PROPERLY AND ACTUALLY ERASES TAPE.
                        ;       THE FOLLOWING TEST SEQUENCE IS PERFORMED:
                        ;
                        ;          1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
                        ;              WRITTEN, AND THE TAPE IS REWOUND AGAIN.
                        ;
                        ;          2.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
                        ;              OF THE TEST RECORDS.
                        ;
                        ;          3.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED
                        ;              (BOT SHOULD BE 0).
                        ;
                        ;          4.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
                        ;              THE COMMAND TERMINATES WITH TAPE STATUS ALERT, THAT THE
                        ;              REVERSE INTO BOT (RIB) STATUS BIT IS SET, AND THAT NO
                        ;              DATA IS TRANSFERRED.  THIS DEMONSTRATES THAT NO DATA
                        ;              WAS ENCOUNTERED IN THE AREA ERASED BY THE ERASE
                        ;              COMMAND.
                        ;
                        ;THE TEST CONSISTS OF THE FOLLOWING 3 SUBTESTS
                        ;
                        ;-
046630                          BGNTST
046630                                                                  T4::
046630  005037  002170          CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
046634  005037  003100          CLR     KTFLG           ;HOLD OFF KT11
046640  012737  005672  002146  MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
046646  012700  052440          MOV     #TST32ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
046652  004737  017376          JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
046656  012737  000001  002164  MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
046664  005037  051310          CLR     T32CNT                  ;CLEAR TAPE RECORD COUNTER
                        ;+
                        ;
                        ;TEST 4, SUBTEST 1
                        ;
                        ;VERIFIES THAT A Erase And Operation Incomplete COMMAND ISSUED WHILE
                        ;THE TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT
                        ;TERMINATION, WITH THE NON-EXECUTABLE FUNCTION (NEF)
                        ;ERROR BIT SET.
                        ;
                        ;-
                        ;
046670                  T32LOOP:
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
6350                                    :-
6351 046670                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     046670                                                                      T4.1:
     046670  104402                                                               TRAP    C$BSUB
6352 046672  004737  052500             JSR     PC,I32REST              ;SET COMMAND PACKET
6353 046676  004737  052572             JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
6354 046702  004737  052622             JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
6355 046706  012737  176750  051314     MOV     #65000.,T32DLY          ;SET UP DELAY COUNTER
6356 046714  004737  016634       10$:  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
6357 046720  103426                     BCS     20$                     ;BR IF INIT WAS OK
6358 046722                             DELAY   250                     ;DELAY ABOUT .25 SEC
     046722  012727  000250                                                       MOV     #250,(PC)+
     046726  000000                                                               .WORD   0
     046730  013727  002116                                                       MOV     L$DLY,(PC)+
     046734  000000                                                               .WORD   0
     046736  005367  177772                                                       DEC     -6(PC)
     046742  001375                                                               BNE     .-4
     046744  005367  177756                                                       DEC     -22(PC)
     046750  001367                                                               BNE     .-20
6359 046752  005337  051314             DEC     T32DLY                  ;BUMP COUNTER
6360 046756  001356                     BNE     10$                     ;BR, IF COUNTER NOT DONE
6361 046760  004737  020070             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6365 046764  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
6366 046766                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     046766  104455                                                               TRAP    C$ERDF
     046770  000621                                                               .WORD   401
     046772  003550                                                               .WORD   SFIERR
     046774  011656                                                               .WORD   SFIMSG
6367 046776                       20$:
6368 046776  012704  051120             MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
6369 047002  004737  010322             JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
6370 047006  103407                     BCS     25$                     ;BR, IF COMMAND ISSUED OK
6371 047010  004737  020070             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6375 047014  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
6376 047016                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     047016  104456                                                               TRAP    C$ERHRD
     047020  000622                                                               .WORD   402
     047022  004754                                                               .WORD   WRTMSG
     047024  011656                                                               .WORD   SFIMSG
6377 047026                       25$:  CKLOOP                          ;LOOP IF SELECTED
     047026  104406                                                               TRAP    C$CLP1
6378 047030  004737  010424             JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6379 047034  103411                     BCS     26$                     ;BR, IF NO PROBLEM
6380 047036  010004                     MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
6381 047040  016501  000000             MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6382 047044  004737  020070             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6386 047050                             ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     047050  104456                                                               TRAP    C$ERHRD
     047052  000623                                                               .WORD   403
     047054  051500                                                               .WORD   T32RWN
     047056  011670                                                               .WORD   PKTSSR
6387 047060                       26$:  CKLOOP                          ;LOOP IF SELECTED
     047060  104406                                                               TRAP    C$CLP1
6388 047062  012703  000400             MOV     #256.,R3                ;STARTING RECORD SIZE
6389 047066  013737  003072  051252     MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
6390 047074  012737  140005  051250     MOV     #140005,T32PK3          ;WRITE DATA,CVC=1,ACK COMMAND
6391 047102  012704  051250             MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
```

```
 6392 047106  010337  051256          27$:    MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
 6393 047112  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6394 047116  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6395 047122  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6396 047126  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 6397 047132  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 6398 047134  001406                          BEQ     28$                     ;BR, IF OK
 6399 047136  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6403                                                                         ;SOFT ERROR, DON'T CARE ABOUT WRITE
 6404                                                                         ;COMMAND'S RESULTS - CHECKING THE
 6405                                                                         ;ERASE COMMAND
 6406 047142                                  ERRSOFT ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      047142  104457                                                                 TRAP    C$ERSOFT
      047144  000624                                                                 .WORD   404
      047146  052336                                                                 .WORD   T32WDC
      047150  011670                                                                 .WORD   PKTSSR
 6407 047152                          28$:    CKLOOP                          ;LOOP IF SELECTED
      047152  104406                                                                 TRAP    C$CLP1
 6408 047154  005723                          TST     (R3)+                   ;BUMP RECORD COUNTER
 6409 047156  020327  001002                  CMP     R3,#514.                ;AT MAX SIZE YET
 6410 047162  001351                          BNE     27$                     ;BR, IF NOT AT END OF LOOP
 6411 047164  004737  010424                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 6412 047170  103411                          BCS     30$                     ;BR, IF NO PROBLEM
 6413 047172  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6414 047176  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 6415 047200  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6419 047204                                  ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
      047204  104456                                                                 TRAP    C$ERHRD
      047206  000625                                                                 .WORD   405
      047210  051500                                                                 .WORD   T32RWN
      047212  011670                                                                 .WORD   PKTSSR
 6420 047214                          30$:    CKLOOP                          ;LOOP IF SELECTED
      047214  104406                                                                 TRAP    C$CLP1
 6421 047216  013701  051146                  MOV     T32BFR+6,R1             ;PICK UP XSTO
 6422 047222  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 6423 047224  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 6424 047230  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 6425 047232  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
 6426 047234  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6430 047240                                  ERRHRD  ERRNO,T32BOE,EXPREC     ;TAPE AT BOT AFTER ERASE
      047240  104456                                                                 TRAP    C$ERHRD
      047242  000626                                                                 .WORD   406
      047244  052166                                                                 .WORD   T32BOE
      047246  016334                                                                 .WORD   EXPREC
 6431 047250                          40$:    CKLOOP                          ;LOOP IF SELECTED
      047250  104406                                                                 TRAP    C$CLP1
 6432 047252  012737  140411  051250          MOV     #140411,T32PK3          ;ERASE TAPE,CVC=1,ACK COMMAND
 6433 047260  012704  051250                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6434 047264  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6435 047270  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6436 047274  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6437 047300  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 6438 047304  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 6439 047306  001406                          BEQ     50$                     ;BR, IF OK
 6440 047310  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6444 047314                                  ERRHRD  ERRNO,T32ERA,PKTSSR     ;TSSR INCORRECT AFTER ERASE DATA
      047314  104456                                                                 TRAP    C$ERHRD
```

```
                                                                                .WORD   407
        047316  000627                                                          .WORD   T32ERA
        047320  051616                                                          .WORD   PKTSSR
        047322  011670
6445    047324                          50$:    CKLOOP                          ;LOOP IF SELECTED
        047324  104406                                                          TRAP    C$CLP1
6446    047326  013701  051146                  MOV     T32BFR+6,R1             ;PICK UP XSTO
6447    047332  010102                          MOV     R1,R2                   ;SET UP EXPECTED
6448    047334  042702  000002                  BIC     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6449    047340  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
6450    047342  001406                          BEQ     55$                     ;BR, IF EQUAL (OK)
6451    047344  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6455    047350                                  ERRHRD  ERRNO,T32BOE,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        047350  104456                                                          TRAP    C$ERHRD
        047352  000630                                                          .WORD   408
        047354  052166                                                          .WORD   T32BOE
        047356  016334                                                          .WORD   EXPREC
6456    047360                          55$:    CKLOOP                          ;LOOP IF SELECTED
        047360  104406                                                          TRAP    C$CLP1
6457    047362  013737  003072  051252          MOV     FREE,T32RB              ;ADDRESS OF BUFFER
6458    047370  012737  140401  051250          MOV     #140401,T32PK3          ;READ REVERSE,ACK,CVC=1 COMMAND
6459    047376  012737  000400  051256          MOV     #256.,T32SZ             ;SET UP THE SIZE OF RECORD
6460    047404  012704  051250                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6461    047410  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6462    047414  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6463    047420  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6464    047424  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED TAPE STATUS ALERT
6465    047430  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
6466    047432  001406                          BEQ     180$                    ;BR, IF OK
6467    047434  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6471    047440                                  ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        047440  104456                                                          TRAP    C$ERHRD
        047442  000631                                                          .WORD   409
        047444  052111                                                          .WORD   T32TSA
        047446  011670                                                          .WORD   PKTSSR
6472    047450                  180$:   CKLOOP                                  ;LOOP IF SELECTED
        047450  104406                                                          TRAP    C$CLP1
6473    047452  013701  051154                  MOV     T32BFR+14,R1            ;GET XST3 STATUS WORD
6474    047456  010102                          MOV     R1,R2                   ;SET UP EXPECTED
6475    047460  052702  000001                  BIS     #BIT0,R2                ;SET THE RIB BIT
6476    047464  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
6477    047466  001406                          BEQ     190$                    ;BR, IF EQUAL (GOOD)
6478    047470  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6482    047474                                  ERRHRD  ERRNO,T32RIB,EXPREC     ;RIB SHOULD BE SET
        047474  104456                                                          TRAP    C$ERHRD
        047476  000632                                                          .WORD   410
        047500  051736                                                          .WORD   T32RIB
        047502  016334                                                          .WORD   EXPREC
6483    047504                  190$:
6484    047504                          ENDSUB                                  ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
        047504                                                                  L10054:
        047504  104403                                                          TRAP    C$ESUB
```

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

```
                                                                                .WORD   412
047572  000634                                                                  .WORD   WRTMSG
047574  004754                                                                  .WORD   SFIMSG
047576  011656
047600                          23$:    CKLOOP                          ;LOOP IF SELECTED
047600  104406                                                                  TRAP    C$CLP1
047602  004737  010424                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
047606  103407                          BCS     30$                     ;BR, IF NO PROBLEM
047610  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
047612  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
047616                                  ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
047616  104456                                                                  TRAP    C$ERHRD
047620  000635                                                                  .WORD   413
047622  051500                                                                  .WORD   T32RWN
047624  011670                                                                  .WORD   PKTSSR
047626                          30$:    CKLOOP                          ;LOOP IF SELECTED
047626  104406                                                                  TRAP    C$CLP1
047630  013701  051146                  MOV     T32BFR+6,R1             ;PICK UP XSTO
047634  010102                          MOV     R1,R2                   ;SET UP EXPECTED
047636  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
047642  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
047644  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
047646  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
047652                                  ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
047652  104456                                                                  TRAP    C$ERHRD
047654  000636                                                                  .WORD   414
047656  051316                                                                  .WORD   T32BOT
047660  016334                                                                  .WORD   EXPREC
047662                          40$:    CKLOOP                          ;LOOP IF SELECTED
047662  104406                                                                  TRAP    C$CLP1
047664  012703  000144                  MOV     #100.,R3                ;STARTING RECORD SIZE
047670  010300                          MOV     R3,R0                   ;SET UP MEMORY FILL
047672  004737  020362                  JSR     PC,FILLMEM              ;CALL MEMORY FILLER
047676  013737  003072  051252          MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
047704  012737  140005  051250  65$:    MOV     #140005,T32PK3          ;WRITE DATA,CVC=1,ACK COMMAND
047712  012704  051250                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
047716  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
047720  004737  020362                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
047724  010337  051256                  MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
047730  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
047734  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
047740  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
047744  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
047750  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
047752  001406                          BEQ     80$                     ;BR, IF OK
047754  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                                                        ;SOFT ERROR, DON'T CARE ABOUT WRITE
                                                                        ;COMMAND'S RESULTS - CHECKING THE
                                                                        ;ERASE COMMAND
047760                                  ERRSOFT ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
047760  104457                                                                  TRAP    C$ERSOFT
047762  000637                                                                  .WORD   415
047764  052336                                                                  .WORD   T32WDC
047766  011670                                                                  .WORD   PKTSSR
047770                          80$:    CKLOOP                          ;LOOP IF SELECTED
047770  104406                                                                  TRAP    C$CLP1
047772  005723                          TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
047774  020327  000156                  CMP     R3,#110.                ;AT 160 SIZE YET
```

```
6589 050000  001341                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
6590 050002  004737  010424                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6591 050006  103407                        BCS     230$                    ;BR, IF NO PROBLEM
6592 050010  010001                        MOV     R0,R1                   ;SAVE TSSR
6593 050012  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6597 050016                                ERRHRD  ERRNO,T32RWN,EXPREC     ;REWIND NOT ACCEPTED
     050016  104456                                                                 TRAP    C$ERHRD
     050020  000640                                                                 .WORD   416
     050022  051500                                                                 .WORD   T32RWN
     050024  016334                                                                 .WORD   EXPREC
6598 050026                        230$:   CKLOOP                          ;LOOP IF SELECTED
     050026  104406                                                                 TRAP    C$CLP1
6599 050030  013701  051146                MOV     T32BFR+6,R1             ;PICK UP XSTO
6600 050034  010102                        MOV     R1,R2                   ;SET UP EXPECTED
6601 050036  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6602 050042  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
6603 050044  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
6604 050046  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6608 050052                                ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     050052  104456                                                                 TRAP    C$ERHRD
     050054  000641                                                                 .WORD   417
     050056  051316                                                                 .WORD   T32BOT
     050060  016334                                                                 .WORD   EXPREC
6609 050062                        240$:   CKLOOP                          ;LOOP IF SELECTED
     050062  104406                                                                 TRAP    C$CLP1
6610 050064  012703  000001                MOV     #1,R3                   ;SET UP FOR SPACE COMMAND
6611 050070  004737  010130                JSR     PC,SPACE                ;ISSUE SPACE COMMAND 1 FORWARD
6612 050074  012737  140411  051250  265$: MOV     #140411,T32PK3          ;ERASE DATA,ACK COMMAN
6613 050102  012704  051250                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6614 050106  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6615 050112  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6616 050116  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6617 050122  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
6618 050126  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6619 050130  001406                        BEQ     280$                    ;BR, IF OK
6620 050132  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6624 050136                                ERRHRD  ERRNO,T32ERA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     050136  104456                                                                 TRAP    C$ERHRD
     050140  000642                                                                 .WORD   418
     050142  051616                                                                 .WORD   T32ERA
     050144  011670                                                                 .WORD   PKTSSR
6625 050146                        280$:   CKLOOP                          ;LOOP IF SELECTED
     050146  104406                                                                 TRAP    C$CLP1
6626 050150  013737  003072  051252          MOV     FREE,T32RB              ;ADDRESS OF BUFFER
6627 050156  012737  140401  051250          MOV     #140401,T32PK3          ;READ REVERSE,ACK,CVC=1 COMMAND
6628 050164  012737  000144  051256          MOV     #100.,T32SZ             ;SET UP THE SIZE OF RECORD
6629 050172  012704  051250                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6630 050176  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6631 050202  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6632 050206  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6633 050212  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TAPE STATUS ALERT
6634 050216  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6635 050220  001406                        BEQ     290$                    ;BR, IF OK
6636 050222  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6640 050226                                ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     050226  104456                                                                 TRAP    C$ERHRD
     050230  000643                                                                 .WORD   419
```

```
        050232  052111                                                                  .WORD   T32TSA
        050234  011670                                                                  .WORD   PKTSSR
  6641  050236                      290$:   CKLOOP                          ;LOOP IF SELECTED
        050236  104406                                                                  TRAP    C$CLP1
  6642  050240  017701  132626              MOV     @FREE,R1                ;GET DATA READ
  6643  050244  012702  000144              MOV     #100.,R2                ;SHOULD BE 100
  6644  050250  020102                      CMP     R1,R2                   ;CHECK'EM OUT
  6645  050252  001406                      BEQ     300$                    ;BR, IF OK
  6646  050254  004737  020070              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  6650  050260                              ERRHRD  ERRNO,T32ECF,EXPREC     ;ERASE COMMAND DIDN'T WORK
        050260  104456                                                                  TRAP    C$ERHRD
        050262  000644                                                                  .WORD   420
        050264  052255                                                                  .WORD   T32ECF
        050266  016334                                                                  .WORD   EXPREC
  6651  050270                      300$:   CKLOOP                          ;LOOP IF SELECTED
        050270  104406                                                                  TRAP    C$CLP1
  6652  050272                      330$:
  6653  050272                              ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
        050272                                                                  L10055:
        050272  104403                                                                  TRAP    C$ESUB
```

```
6655                                    ;+
6656                                    ;
6657                                    ;TEST 4, SUBTEST 3
6658                                    ;
6659                                    ;       VERIFIES THAT AN ERASE COMMAND ENCOUNTERING THE EOT MARKER, OR
6660                                    ;       EXECUTED BEYOND THE EOT MARKER, CAUSES TAPE STATUS ALERT
6661                                    ;       TERMINATION WITH THE EOT STATUS BIT SET.  ALSO VERIFIES THAT THE
6662                                    ;       OTHER TAPE MOTION COMMANDS EXECUTED WHEN THE TAPE IS BLANK
6663                                    ;       RESULT IN UNRECOVERABLE ERROR TERMINATION AND OPERATION
6664                                    ;       INCOMPLETE STATUS.  THE FOLLOWING TEST SEQUENCE IS EXECUTED:
6665                                    ;
6666                                    ;            1.  THE TAPE IS REWOUND.
6667                                    ;
6668                                    ;            2.  ERASE COMMANDS ARE REPEATEDLY ISSUED UNTIL EOT STATUS
6669                                    ;                IS SEEN.  AN ERROR IS REPORTED IF ANY TERMINATION OTHER
6670                                    ;                THAN NORMAL (WITH EOT=0) OR TAPE STATUS ALERT (WITH
6671                                    ;                EOT=1) IS ENCOUNTERED.  IF THE CONTROLLER OR TRANSPORT
6672                                    ;                DOES NOT DETECT THE EOT, THE TRANSPORT WILL FAULT.
6673                                    ;                THIS IS REPORTED AS A FATAL ERROR AND THE TEST IS
6674                                    ;                ABORTED.
6675                                    ;
6676                                    ;            3.  AN ADDITIONAL ERASE COMMAND IS ISSUED AND IT IS
6677                                    ;                VERIFIED THAT TAPE STATUS ALERT TERMINATION RESULTS,
6678                                    ;                WITH EOT=1.
6679                                    ;
6680                                    ;            4.  IT IS VERIFIED THAT EACH OF THE FOLLOWING COMMANDS
6681                                    ;                (ISSUED IN THE ORDER GIVEN) RESULTS IN UNRECOVERABLE
6682                                    ;                ERROR TERMINATION WITH OPI=1:  SPACE RECORDS REVERSE
6683                                    ;                SKIP TAPE MARKS REVERSE READ REVERSE REREAD PREVIOUS
6684                                    ;                (OPP=0) REREAD PREVIOUS (OPP=1) REREAD NEXT (OPP=1)
6685                                    ;                REREAD NEXT (OPP=0) READ NEXT SKIP TAPE MARKS REVERSE
6686                                    ;                SKIP TAPE MARKS FORWARD SPACE RECORDS FORWARD WRITE
6687                                    ;                DATA RETRY
6688                                    ;
6689                                    ;
6690                                    ;
6691                                    ;
6692                                    ;-
6693 050274                                    BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      050274                                                                    T4.3:
      050274  104402                                                                TRAP    C$BSUB
6694 050276  004737  052572            9$:     JSR     PC,T32RT2       ;SET UP OTHER COMMAND PACKET
6695 050302  004737  052500                    JSR     PC,T32REST      ;SET COMMAND PACKET
6696 050306  004737  052622                    JSR     PC,T32RT3       ;SET UP OTHER COMMAND PACKET
6697 050312  012737  176750  051314            MOV     #65000.,T32DLY  ;SET UP DELAY COUNTER
6698 050320  004737  016634            10$:    JSR     PC,$OFINIT      ;DO INITIALIZE ON CONTROLLER
6699 050324  103426                            BCS     20$             ;BR IF INIT WAS OK
6700 050326                                     DELAY   250             ;DELAY ABOUT .25 SEC
      050326  012727  000250                                                   MOV     #250.,(PC)+
      050332  000000                                                           .WORD   0
      050334  013727  002116                                                   MOV     L$DLY,(PC)+
      050340  000000                                                           .WORD   0
      050342  005367  177772                                                   DEC     -6(PC)
      050346  001375                                                           BNE     .-4
      050350  005367  177756                                                   DEC     -22(PC)
      050354  001367                                                           BNE     .-20
6701 050356  005337  051314                    DEC     T32DLY          ;BUMP COUNTER
```

```
6702 050362  001356                        BNE     10$                     ;BR, IF COUNTER NOT DONE
6703 050364  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6707 050370  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
6708 050372                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     050372  104455                                                                TRAP    C$ERDF
     050374  000645                                                                .WORD   421
     050376  003550                                                                .WORD   SFIERR
     050400  011656                                                                .WORD   SFIMSG
6709 050402                         20$:
6710
6711 050402  012704  051120                MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
6712 050406  004737  010322                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
6713 050412  103407                        BCS     23$                     ;BR, IF COMMAND ISSUED OK
6714 050414  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6718 050420  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
6719 050422                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     050422  104456                                                                TRAP    C$ERHRD
     050424  000646                                                                .WORD   422
     050426  004754                                                                .WORD   WRTMSG
     050430  011656                                                                .WORD   SFIMSG
6720 050432                         23$:    CKLOOP                          ;LOOP IF SELECTED
     050432  104406                                                                TRAP    C$CLP1
6721 050434  004737  010424                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6722 050440  103411                        BCS     30$                     ;BR, IF NO PROBLEM
6723 050442  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6724 050446  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
6725 050450  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6729 050454                                ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     050454  104456                                                                TRAP    C$ERHRD
     050456  000647                                                                .WORD   423
     050460  051500                                                                .WORD   T32RWN
     050462  011670                                                                .WORD   PKTSSR
6730 050464                         30$:    CKLOOP                          ;LOOP IF SELECTED
     050464  104406                                                                TRAP    C$CLP1
6731 050466  013701  051146                MOV     T32BFR+6,R1             ;PICK UP XSTO
6732 050472  010102                        MOV     R1,R2                   ;SET UP EXPECTED
6733 050474  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6734 050500  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
6735 050502  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
6736 050504  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6740 050510                                ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     050510  104456                                                                TRAP    C$ERHRD
     050512  000650                                                                .WORD   424
     050514  051316                                                                .WORD   T32BOT
     050516  016334                                                                .WORD   EXPREC
6741 050520                         40$:    CKLOOP                          ;LOOP IF SELECTED
     050520  104406                                                                TRAP    C$CLP1
6742 050522  012737  140411  051250  65$:    MOV     #140411,T32PK3          ;ERASE DATA,CVC=1,ACK COMMAND
6743 050530  012704  051250                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6744 050534  010337  051256                MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
6745 050540  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6746 050544  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6747 050550  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6748 050554  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
6749 050560  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6750 050562  001757                        BEQ     65$                     ;BR, IF OK
6751 050564  010102                        MOV     R1,R2                   ;SAVE ORIG TSSR
```

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6752 050566  042701  177760                BIC     #177760,R1              ;ONLY SAVE 4 BITS
6753 050572  122701  000004                CMPB    #BIT2,R1                ;CHECK FOR REAL TAPE STATUS ALERT
6754 050576  001410                        BEQ     80$                     ;BR, IF REAL TAPE STATUS ALERT
6755 050600  010201                        MOV     R2,R1                   ;RESTORE R1 FOR ERROR PRINTOUT
6756 050602  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6760 050606                                ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     050606  104456                                                                TRAP    C$ERHRD
     050610  000651                                                                .WORD   425
     050612  052336                                                                .WORD   T32WDC
     050614  011670                                                                .WORD   PKTSSR
6761 050616  000741                        BR      65$                     ;KEEP GOING
6762 050620                        80$:    CKLOOP                          ;LOOP IF SELECTED
     050620  104406                                                                TRAP    C$CLP1
6763 050622  013701  051146                MOV     T32BFR+6,R1             ;PICK UP XSTO
6764 050626  010102                        MOV     R1,R2                   ;SET UP EXPECTED
6765 050630  052702  000001                BIS     #BIT0,R2                ;SET EOT BIT IN EXPECTED
6766 050634  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
6767 050636  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
6768 050640  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6772 050644                                ERRHRD  ERRNO,T32EOT,EXPREC     ;TAPE NOT AT EOT AFTER ERASE COMMANDS
     050644  104456                                                                TRAP    C$ERHRD
     050646  000652                                                                .WORD   426
     050650  051411                                                                .WORD   T32EOT
     050652  016334                                                                .WORD   EXPREC
6773 050654                        240$:   CKLOOP                          ;LOOP IF SELECTED
     050654  104406                                                                TRAP    C$CLP1
6774 050656  012703  051260                MOV     #T32CMD,R3              ;STARTING RECORD SIZE
6775 050662  013737  003072  051252        MOV     FREE,T32RB              ;STARTING READ BUFFER ADDRESS
6776 050670  011337  051250        265$:   MOV     (R3),T32PK3             ;READ DATA,ACK COMMAND
6777 050674  012704  051250                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6778 050700  012700  177777                MOV     #177777,R0              ;SET PATTERN IN CORRECT REGISTER
6779 050704  004737  020362                JSR     PC,FILLMEM              ;FILL MEMORY WITH ALL ONES
6780 050710  012737  000144  051256        MOV     #100.,T32SZ             ;SET UP RECORD SIZE IN PACKET
6781 050716  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6782 050722  012737  000012  051314        MOV     #10.,T32DLY             ;SET UP DELAY COUNTER
6783 050730  004737  017110        270$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6784 050734  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6785 050740  012702  100214                MOV     #SSR!SC!BIT2!BIT3,R2    ;SET UP EXPECTED
6786 050744  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6787 050746  001425                        BEQ     280$                    ;BR, IF OK
6788 050750                                DELAY   250                     ;DELAY FOR SSR TO BE SET
     050750  012727  000250                                                        MOV     #250,(PC)+
     050754  000000                                                                .WORD   0
     050756  013727  002116                                                        MOV     L$DLY,(PC)+
     050762  000000                                                                .WORD   0
     050764  005367  177772                                                        DEC     -6(PC)
     050770  001375                                                                BNE     .-4
     050772  005367  177756                                                        DEC     -22(PC)
     050776  001367                                                                BNE     .-20
6789 051000  005337  051314                DEC     T32DLY                  ;COUNT DELAY ROUTINE DOWN
6790 051004  001351                        BNE     270$                    ;BR, IF DELAY HAS NOT ENDED
6791 051006  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6795 051012                                ERRHRD  ERRNO,T32ECF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     051012  104456                                                                TRAP    C$ERHRD
     051014  000653                                                                .WORD   427
     051016  052255                                                                .WORD   T32ECF
     051020  011670                                                                .WORD   PKTSSR
```

```
6796 051022                          280$:   CKLOOP                          ;LOOP IF SELECTED
     051022  104406                                                                  TRAP    C$CLP1
6797 051024  013701  051154                  MOV     T32BFR+14,R1            ;PICK UP XST3
6798 051030  010102                          MOV     R1,R2                   ;SET UP EXPECTED
6799 051032  052702  000100                  BIS     #BIT6,R2                ;SET OPI BIT IN EXPECTED
6800 051036  020102                          CMP     R1,R2                   ;IS OPI BIT SET
6801 051040  001406                          BEQ     290$                    ;BR, IF BIT IS SET
6802 051042  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6806 051046                                  ERRHRD  ERRNO,T32OPI,EXPREC     ;OPI BIT NOT SET
     051046  104456                                                                  TRAP    C$ERHRD
     051050  000654                                                                  .WORD   428
     051052  052403                                                                  .WORD   T32OPI
     051054  016334                                                                  .WORD   EXPREC
6807 051056                          290$:   CKLOOP                          ;LOOP IF SELECTED
     051056  104406                                                                  TRAP    C$CLP1
6808 051060  005723                          TST     (R3)+                   ;BUMP COMMAND POINTER
6809 051062  021327  177777                  CMP     (R3),#177777            ;AT END OF TABLE YET
6810 051066  001300                          BNE     265$                    ;BR, KEEP TRYING COMMANDS
6811 051070                          291$:   ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     051070                                                                       L10056:
     051070  104403                                                                  TRAP    C$ESUB
6812                                 ;
6813                                 ;
6814                                 ;
6815 051072  004737  017344                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
6816 051076  103002                          BCC     163$                    ;BR, IF NO LOOP REQUIRED
6817 051100  000137  046670                  JMP     T32LOOP                 ;EXECUTE AGAIN
6818 051104                          163$:   EXIT    TST                     ;ALL DONE THIS TEST
     051104  104432                                                                  TRAP    C$EXIT
     051106  001536                                                                  .WORD   L10053-.
```

```
                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
                                        .BLKB   10-<.-TUV2A&7>
                                T32PACKET:                              ;COMMAND PACKET FOR TEST
                                        .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
                                        .WORD   T32DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
                                        .WORD   0
                                        .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
                                T32DATA:                                ;CHARACTERISTICS DATA BLOCK
                                        .WORD   T32BFR                  ;ADDRESS OF MESSAGE BUFFER
                                        .WORD   0
                                        .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
                                        .WORD   0
                                T32BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
                                        .BLKB   10-<.-TUV2A&7>
                                T32PK2:
                                        .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
                                        .WORD   0                       ;ADDRESS OF SELECT BLOCK DATA
                                        .WORD   0
                                        .WORD   6.                      ;SIZE OF DATA PACKET
                                        .BLKB   10-<.-TUV2A&7>
                                T32PK3:
                                        .WORD   100005                  ;REREAD COMMAND, AND ACK
                                T32RB:
                                T32WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
                                        .WORD   0
                                T32SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES
                                T32CMD:
                                        .WORD   140410                  ;SPACE RECORDS REVERSE
                                        .WORD   141410                  ;SKIP TAPE MARKS REVERSE
                                        .WORD   140401                  ;READ REVERSE
                                        .WORD   141001                  ;REREAD PREVIOUS (OPP=0)
                                        .WORD   161401                  ;REREAD NEXT (OPP=1)
                                        .WORD   161001                  ;REREAD PREVIOUS (OPP=1)
                                        .WORD   141401                  ;REREAD NEXT (OPP=0)
                                        .WORD   140001                  ;READ NEXT
                                        .WORD   141410                  ;SKIP TAPE MARKS REVERSE
                                        .WORD   141010                  ;SKIP RECORDS FORWARD
                                        .WORD   141005                  ;WRITE DATA RETRY
                                        .WORD   177777                  ;END OF DATA
                                ;
                                T32CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
                                T32CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
                                T32DLY: .WORD   0                       ;DELAY COUNTER
```

```
6877
6878                                    ;+
6879                                    ;LOCAL TEXT MESSAGES FOR TEST
6880                                    ;-
6881
6882
6883 051316  124  141  160  T32BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
6884 051411  124  141  160  T32EOT: .ASCIZ  'Tape Status Alert During Erase To EOT, But EOT Not Set'
6885 051500  122  145  167  T32RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
6886 051547  124  123  123  T32AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
6887 051616  124  123  123  T32ERA: .ASCIZ  'TSSR Not Correct After ERASE Command'
6888 051663  124  123  102  T32BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
6889 051736  122  105  101  T32RIB: .ASCIZ  'READ REVERSE, After ERASE From BOT, Failed To Set RIB In XST3'
6890 052034  124  123  123  T32SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
6891 052111  124  123  123  T32TSA: .ASCIZ  'TSSR Not Correct After READ REVERSE Into BOT'
6892 052166  102  117  124  T32BOE: .ASCIZ 'BOT (XST0) Still Set After Erase From Tape''s BOT Marker'
6893 052255  105  122  101  T32ECF: .ASCIZ  'ERASE Failed To Clear Tape (Erase) Tape Properly'
6894
6895 052336  124  123  123  T32WDC: .ASCIZ  'TSSR Not Correct After ERASE Command'
6896 052403  117  120  111  T32OPI: .ASCIZ  'OPI Bit (XST3) Failed To Set'
6897 052440  105  162  141  TST32ID:       .ASCIZ  'Erase And Operation Incomplete'
6898                                    .EVEN
6899                                    ;+
6900                                    ;
6901                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
6902                                    ;WRITE SUBSYSTEM MEMORY COMMAND
6903                                    ;
6904                                    ;-
6905
6906 052500                         T32REST:
6907 052500                                 SAVREG                          ;SAVE THE REGISTERS
6908 052504  012701  051120                 MOV     #T32PACKET,R1           ;START OF THE PACKET
6909 052510  012721  100004                 MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
6910 052514  012721  051130                 MOV     #T32DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
6911 052520  005021                         CLR     (R1)+                   ;EXTENDED ADDRESS
6912 052522  012721  000012                 MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
6913 052526  012721  051140                 MOV     #T32BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
6914 052532  005021                         CLR     (R1)+
6915 052534  012721  000024                 MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
6916 052540  005021                         CLR     (R1)+
6917 052542  012711  000000                 MOV     #0,(R1)                 ;SELECT DRIVE ZERO
6918 052546  012702  000030                 MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
6919 052552  012762  177777  051140  64$:  MOV     #177777,T32BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
6920 052560  005742                         TST     -(R2)                   ;NEXT LOCATION
6921 052562  022702  000000                 CMP     #0,R2                   ;AT END OF LOOP YET
6922 052566  001371                         BNE     64$                     ;KEEP GOING UNTIL DONE
6923 052570  000207                         RTS     PC                      ;RETURN
6924
6925
6926 052572                         T32RT2:
6927 052572                                 SAVREG                          ;SAVE THE REGISTERS
6928 052576  012701  051230                 MOV     #T32PK2,R1              ;START OF THE PACKET
6929 052602  012721  100006                 MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
6930 052606  005021                         CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
6931 052610  005021                         CLR     (R1)+                   ;EXTENDED ADDRESS
6932 052612  012721  000006                 MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
6933 052616  005021                         CLR     (R1)+
```

```
 6934 052620  000207                        RTS     PC                      ;RETURN
 6935 052622                          T32RT3:
 6936 052622                                 SAVREG                          ;SAVE REGISTERS
 6937 052626  012701  051250                 MOV     #T32PK3,R1              ;SET UP POINTER ADDRESS
 6938 052632  005021                         CLR     (R1)+                   ;COMMAND SPACE
 6939 052634  005021                         CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 6940 052636  005021                         CLR     (R1)+                   ;EXTENDED ADDRESS
 6941 052640  005011                         CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 6942 052642  000207                         RTS     PC                      ;RETURN
 6943 052644                                 ENDTST
      052644                                                      L10053:
      052644  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
                                ;
                                ;
                                ;
                                ;-
052646                                  BGNTST
052646                                                                  T5::
052646  005037  002170                    CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
052652  005037  003100                    CLR     KTFLG           ;HOLD OFF KT11
052656  012737  005672  002146            MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
052664  012700  057112                    MOV     #TST34ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
052670  004737  017376                    JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
052674  012737  000001  002164            MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
052702  005037  055542                    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
```

```
                                        ;          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 TERMINATION OCCURS, WITH EOT=1.
                                        ;
                                        ;       11. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
                                        ;          3, IS ISSUED, AND IT IS CHECKED 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 SKIP FILE MARKS REVERSE COMMAND IS ISSUED, WHICH
                                        ;          SHOULD SKIP ALL THE WAY TO BOT, AND IT IS CHECKED THAT
                                        ;          TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=0,
                                        ;          BOT=1, AND RIB=1.
                                        ;
                                        ;-
7034 052706                             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.
                                        ;
                                        ;
                                        ;
                                        ;-
                                        
052706                                          BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
052706                                                                          T5.1:
052706  104402                                                                      TRAP    C$BSUB
                                        ;
                                        ;*********************************************************************
                                        ;
                                        ;       SET UP THE PACKET BUFFERS AND WAIT LONG TIME FOR SSR
                                        ;       THEN ISSUE A SOFT INITIALIZE
                                        ;
                                        ;*********************************************************************
                                        ;
052710  004737  057614                          JSR     PC,T34REST      ;SET COMMAND PACKET
052714  004737  057750                          JSR     PC,T34RT3       ;RESTORE PACKET
052720  004737  057706                          JSR     PC,T34RT2       ;SET UP OTHER COMMAND PACKET
052724  012737  176750  055544                  MOV     #65000.,T34DLY  ;SET UP COUNTER
052732  004737  016634          10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
052736  103433                          BCS     20$             ;BR IF INIT WAS OK
052740                                  DELAY   250             ;DELAY A WHILE
052740  012727  000250                                                  MOV     #250,(PC)+
052744  000000                                                          .WORD   0
052746  013727  002116                                                  MOV     L$DLY,(PC)+
052752  000000                                                          .WORD   0
052754  005367  177772                                                  DEC     -6(PC)
052760  001375                                                          BNE     .-4
052762  005367  177756                                                  DEC     -22(PC)
052766  001367                                                          BNE     .-20
052770  016501  000000                          MOV     TSSR(R5),R1     ;GET TSSR STATUS
052774  032701  000200                          BIT     #SSR,R1         ;CHECK FOR SSR SET
053000  001012                                  BNE     20$             ;BR, WHEN SSR IS SET
053002  005337  055544                          DEC     T34DLY          ;BUMP COUNTER DOWN
053006  001351                                  BNE     10$             ;BR, IF MORE DELAY REQUIRED
053010  004737  020070                          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
053014  010001                                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
053016                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
```

TEST 5: OPERATIONS AT EOT

```
                                                                        TRAP    C$ERDF
        053016  104455                                                 .WORD   501
        053020  000765                                                 .WORD   SFIERR
        053022  003550                                                 .WORD   SFIMSG
        053024  011656
 7086   053026                         20$:    CKLOOP                 ;LOOP IF SELECTED
        053026  104406                                                 TRAP    C$CLP1
 7087
 7088                                   ;
 7089                                   ;*************************************************************************
 7090                                   ;
 7091                                   ;       ISSUE A WRITE CHARACTERISTICS COMMAND TO CONTROLLER
 7092                                   ;
 7093                                   ;*************************************************************************
 7094                                   ;
 7095                                   ;
 7096   053030  012704  055400                  MOV     #T34PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
 7097   053034  004737  010322                  JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
 7098   053040  103407                          BCS     30$             ;BR, IF COMMAND ISSUED OK
 7099   053042  004737  020070                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7103   053046  010001                          MOV     R0,R1           ;SAVE CONTENTS OF TSSR
 7104   053050                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        053050  104456                                                 TRAP    C$ERHRD
        053052  000766                                                 .WORD   502
        053054  004754                                                 .WORD   WRTMSG
        053056  011656                                                 .WORD   SFIMSG
 7105   053060                         30$:    CKLOOP                 ;LOOP IF SELECTED
        053060  104406                                                 TRAP    C$CLP1
 7106                                   ;
 7107                                   ;*************************************************************************
 7108                                   ;
 7109                                   ;       ISSUE A REWIND COMMAND
 7110                                   ;
 7111                                   ;*************************************************************************
 7112                                   ;
 7113   053062  004737  010424                  JSR     PC,REWIND       ;REWIND CALL
 7114   053066  103411                          BCS     35$             ;BR, IF TSSR IS OK (GOOD)
 7115   053070  016501  000000                  MOV     TSSR(R5),R1     ;GET TSSR
 7116   053074  010004                          MOV     R0,R4           ;SET UP PACKET
 7117   053076  004737  020070                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7121   053102                                 ERRHRD  ERRNO,T34RWN,PKTSSR     ;TSSR IS INCORRECT AFTER REWIND
        053102  104456                                                 TRAP    C$ERHRD
        053104  000767                                                 .WORD   503
        053106  057134                                                 .WORD   T34RWN
        053110  011670                                                 .WORD   PKTSSR
 7122   053112                         35$:    CKLOOP                 ;LOOP IF SELECTED
        053112  104406                                                 TRAP    C$CLP1
 7123                                   ;
 7124                                   ;*************************************************************************
 7125                                   ;
 7126                                   ;       ISSUE A WRITE COMMAND, CHECK FOR ERRORS, THIS IS SO THAT THE
 7127                                   ;       DRIVE WILL NOT JUST HANG IF AN ERROR OCCURS.
 7128                                   ;
 7129                                   ;*************************************************************************
 7130                                   ;
 7131   053114  012737  140005  055530          MOV     #140005,T34PK3  ;WRITE DATA, ACK, CVC=1
 7132   053122  013737  003072  055532          MOV     FREE,T34WB      ;SET UP WRITE BUFFER ADDRESS
 7133   053130  012737  006654  055536          MOV     #3500.,T34SZ    ;SET UP BUFFER SIZE (3.5 BYTES)
```

```
 7134 053136  012704  055530            MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7135 053142  010465  177776    36$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7136 053146  004737  017110            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7137 053152  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7138 053156  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED
 7139 053162  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
 7140 053164  001407                    BEQ     39$                     ;BR, IF ALL IS WELL NO PROBLEMS
 7141 053166  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7145 053172                            ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE
      053172  104457                                                                    TRAP    C$ERSOFT
      053174  000770                                                                    .WORD   504
      053176  005011                                                                    .WORD   WRTERR
      053200  011670                                                                    .WORD   PKTSSR
 7146 053202  000757                    BR      36$                     ;BR, TO DO MORE CONTROLLED WRITES
 7147 053204                    39$:    CKLOOP                          ;LOOP ON ERROR IF SELECTED
      053204  104406                                                                    TRAP    C$CLP1
 7148
 7149
 7150                                   ;
 7151                                   ;*************************************************************************
 7152                                   ;
 7153                                   ;       ISSUE A WRITE COMMAND, KEEP GOING UNTIL TAPE STATUS ALERT
 7154                                   ;
 7155                                   ;*************************************************************************
 7156                                   ;
 7157 053206  012737  140005  055530            MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
 7158 053214  012703  176750                    MOV     #65000.,R3              ;SET MAX NUMBER OF WRITES
 7159 053220  013737  003072  055532            MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
 7160 053226  012737  006654  055536            MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (3.5K BYTES)
 7161 053234  012704  055530                    MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7162 053240  010465  177776    40$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7163 053244  004737  017110            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7164 053250  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7165 053254  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED
 7166 053260  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
 7167 053262  001010                    BNE     50$                     ;BR, IT MIGHT BE END OF TAPE
 7168 053264  005303                    DEC     R3                      ;DEC RECORD COUNTER
 7169 053266  001364                    BNE     40$                     ;BR, IF MORE TO GO
 7170 053270  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7174 053274                            ERRDF   ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
      053274  104455                                                                    TRAP    C$ERDF
      053276  000771                                                                    .WORD   505
      053300  056745                                                                    .WORD   T34ET
      053302  011670                                                                    .WORD   PKTSSR
 7175                                   ;
 7176                                   ;*************************************************************************
 7177                                   ;
 7178                                   ;       HAVE TAPE STATUS ALERT, NOW CHECK FOR EOT. IF NEITHER KEEP GOING
 7179                                   ;
 7180                                   ;*************************************************************************
 7181                                   ;
 7182 053304  032701  000004    50$:    BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
 7183 053310  001001                    BNE     60$                     ;BR, IF SET
 7184 053312  000752                    BR      40$                     ;KEEP GOING
 7185 053314  013701  055426    60$:    MOV     T34BFR+6,R1             ;PICK UP XSTO
 7186 053320  010102                    MOV     R1,R2                   ;SET UP EXPECTED
 7187 053322  052702  000001            BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
```

```
7188 053326  020102                    CMP     R1,R2                   ;WAS THE BIT ON
7189 053330  001402                    BEQ     80$                     ;BR, IF EOT WAS FOUND
7190 053332  000137  053240            JMP     40$                     ;KEEP LOOKING
7191 053336                    80$:    CKLOOP                          ;LOOP IF SELECTED
     053336  104406                                                            TRAP    C$CLP1
7192                                   ;
7193                                   ;*************************************************************************
7194                                   ;
7195                                   ;       ISSUE ONE MORE WRITE AFTER EOT DETECTED
7196                                   ;
7197                                   ;*************************************************************************
7198                                   ;
7199 053340  012737  140005  055530            MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
7200 053346  013737  003072  055532            MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
7201 053354  012737  006654  055536            MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
7202 053362  012704  055530                    MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7203 053366  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7204 053372  004737  017110                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7205 053376  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7206 053402  012702  100204                    MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
7207 053406  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
7208 053410  001406                            BEQ     90$                     ;BR, IF THEY ARE OK
7209 053412  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7213 053416                                    ERRHRD  ERRNO,T34ET2,PKTSSR     ;WRITE TAPE AT EOT FAILED TO SET TSA
     053416  104456                                                                 TRAP    C$ERHRD
     053420  000772                                                                 .WORD   506
     053422  056316                                                                 .WORD   T34ET2
     053424  011670                                                                 .WORD   PKTSSR
7214 053426                    90$:    CKLOOP                          ;LOOP IF SELECTED
     053426  104406                                                            TRAP    C$CLP1
7215                                   ;
7216                                   ;*************************************************************************
7217                                   ;
7218                                   ;       CHECK TO BE SURE EOT IS STILL SET, IT SHOULD BE
7219                                   ;
7220                                   ;*************************************************************************
7221                                   ;
7222 053430  013701  055426                    MOV     T34BFR+6,R1             ;PICK UP XSTO
7223 053434  010102                            MOV     R1,R2                   ;SET UP EXPECTED
7224 053436  052702  000001                    BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7225 053442  020102                            CMP     R1,R2                   ;WAS THE BIT ON
7226 053444  001406                            BEQ     100$                    ;BR, IF EOT WAS FOUND
7227 053446  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7231 053452                                    ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     053452  104456                                                                 TRAP    C$ERHRD
     053454  000773                                                                 .WORD   507
     053456  056404                                                                 .WORD   T34ETN
     053460  016334                                                                 .WORD   EXPREC
7232 053462                    100$:   CKLOOP                          ;LOOP IF SELECTED
     053462  104406                                                            TRAP    C$CLP1
7233                                   ;
7234                                   ;*************************************************************************
7235                                   ;
7236                                   ;       NOW ISSUE A WRITE TAPE MARK, STILL BEYOND EOT
7237                                   ;
7238                                   ;*************************************************************************
7239                                   ;
```

```
7240 053464  012737  140011  055530          MOV     #140011,T34PK3          ;WRITE TAPE MARK, ACK, CVC=1 COMMAND
7241 053472  012704  055530                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7242 053476  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7243 053502  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7244 053506  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7245 053512  012702  100204                  MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
7246 053516  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7247 053520  001406                          BEQ     110$                    ;BR, IF STATUS IS GOOD (OK)
7248 053522  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7252 053526                                  ERRHRD  ERRNO,T34WTM,PKTSSR     ;WRITE TAPE MARK FAILED
     053526  104456                                                                  TRAP    C$ERHRD
     053530  000774                                                                  .WORD   508
     053532  056227                                                                  .WORD   T34WTM
     053534  011670                                                                  .WORD   PKTSSR
7253 053536                          110$:   CKLOOP                          ;LOOP IF SELECTED
     053536  104406                                                                  TRAP    C$CLP1
7254                                 ;
7255                                 ;*************************************************************************
7256                                 ;
7257                                 ;       NOW CHECK TO BE SURE EOT IS STILL SET
7258                                 ;
7259                                 ;*************************************************************************
7260                                 ;
7261 053540  013701  055426                  MOV     T34BFR+6,R1             ;PICK UP XSTO
7262 053544  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7263 053546  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7264 053552  020102                          CMP     R1,R2                   ;WAS THE BIT ON
7265 053554  001406                          BEQ     120$                    ;BR, IF EOT WAS FOUND
7266 053556  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7270 053562                                  ERRHRD  ERRNO,T34ETO,EXPREC     ;EOT BIT (XSTO) NOT SET
     053562  104456                                                                  TRAP    C$ERHRD
     053564  000775                                                                  .WORD   509
     053566  055652                                                                  .WORD   T34ETO
     053570  016334                                                                  .WORD   EXPREC
7271 053572                          120$:   CKLOOP                          ;LOOP IF SELECTED
     053572  104406                                                                  TRAP    C$CLP1
7272                                 ;
7273                                 ;*************************************************************************
7274                                 ;
7275                                 ;       NOW ISSUE A SKIP TAPE MARK REVERSE RIGHT BACK INTO THE JUST WRITTEN TM
7276                                 ;
7277                                 ;*************************************************************************
7278                                 ;
7279 053574  012737  141410  055530          MOV     #141410,T34PK3          ;SKIP TAPE MARK REVERSE ACK,CVC=1 COMMAND
7280 053602  012737  000001  055532          MOV     #1,T34WB                ;SET NUMBER (1) OF TMS TO SKIP
7281 053610  012704  055530                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7282 053614  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7283 053620  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7284 053624  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7285 053630  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7286 053634  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7287 053636  001406                          BEQ     130$                    ;BR, IF STATUS IS GOOD (OK)
7288 053640  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7292 053644                                  ERRHRD  ERRNO,T34STM,PKTSSR     ;SKIP TAPE MARK REVERSE FAILED
     053644  104456                                                                  TRAP    C$ERHRD
     053646  000776                                                                  .WORD   510
     053650  057213                                                                  .WORD   T34SIM
```

```
                                                                                    .WORD   PKTSSR
7293 053654                     130$:   CKLOOP                          ;LOOP IF SELECTED
     053654  104406                                                                 TRAP    C$CLP1
7294                            ;
7295                            ;*************************************************************************
7296                            ;
7297                            ;       EOT SHOULD STILL BE SET
7298                            ;
7299                            ;*************************************************************************
7300                            ;
7301 053656  013701  055426            MOV     T34BFR+6,R1             ;PICK UP XSTO
7302 053662  010102                    MOV     R1,R2                   ;SET UP EXPECTED
7303 053664  052702  000001            BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7304 053670  020102                    CMP     R1,R2                   ;WAS THE BIT ON
7305 053672  001406                    BEQ     140$                    ;BR, IF EOT WAS FOUND
7306 053674  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7310 053700                            ERRHRD  ERRNO,T34STE,EXPREC     ;EOT BIT (XSTO) NOT SET
     053700  104456                                                                 TRAP    C$ERHRD
     053702  000777                                                                 .WORD   511
     053704  057307                                                                 .WORD   T34STE
     053706  016334                                                                 .WORD   EXPREC
7311 053710                     140$:   CKLOOP                          ;LOOP IF SELECTED
     053710  104406                                                                 TRAP    C$CLP1
7312                            ;
7313                            ;*************************************************************************
7314                            ;
7315                            ;       THE TMK BIT SHOULD BE SET ALSO
7316                            ;
7317                            ;*************************************************************************
7318                            ;
7319 053712  013701  055426            MOV     T34BFR+6,R1             ;PICK UP XSTO
7320 053716  010102                    MOV     R1,R2                   ;SET UP EXPECTED
7321 053720  052702  100000            BIS     #BIT15,R2               ;SET THE TMK BIT ON IN EXPECTED
7322 053724  020102                    CMP     R1,R2                   ;WAS THE BIT ON
7323 053726  001406                    BEQ     150$                    ;BR, IF TMK WAS FOUND
7324 053730  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7328 053734                            ERRHRD  ERRNO,T34TMK,EXPREC     ;TMK (XSTO) NOT SET
     053734  104456                                                                 TRAP    C$ERHRD
     053736  001000                                                                 .WORD   512
     053740  056637                                                                 .WORD   T34TMK
     053742  016334                                                                 .WORD   EXPREC
7329 053744                     150$:   CKLOOP                          ;LOOP IF SELECTED
     053744  104406                                                                 TRAP    C$CLP1
7330                            ;
7331                            ;*************************************************************************
7332                            ;
7333                            ;       ISSUE SPACE RECORDS REVERSE FOR 1 RECORD, STILL BEYOND EOT
7334                            ;
7335                            ;*************************************************************************
7336                            ;
7337 053746  012737  140410  055530    MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
7338 053754  012737  000001  055532    MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
7339 053762  012704  055530            MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7340 053766  010465  177776            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7341 053772  004737  017110            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7342 053776  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7343 054002  012702  100204            MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
```

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7344 054006  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
7345 054010  001006                    BNE     160$                    ;BR, IT MIGHT BE END OF TAPE
7346 054012  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7350 054016                            ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE RECORDS REVERSE FAILED
     054016  104456                                                            TRAP    C$ERHRD
     054020  001001                                                            .WORD   513
     054022  055564                                                            .WORD   T34POS
     054024  011670                                                            .WORD   PKTSSR
7351 054026                    160$:   CKLOOP                          ;LOOP IF SELECTED
     054026  104406                                                            TRAP    C$CLP1
7352                                   ;
7353                                   ;*************************************************************************
7354                                   ;
7355                                   ;       EOT SHOULD STILL BE SET
7356                                   ;
7357                                   ;*************************************************************************
7358                                   ;
7359 054030  013701  055426            MOV     T34BFR+6,R1             ;PICK UP XSTO
7360 054034  010102                    MOV     R1,R2                   ;SET UP EXPECTED
7361 054036  052702  000001            BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7362 054042  020102                    CMP     R1,R2                   ;WAS THE BIT ON
7363 054044  001406                    BEQ     163$                    ;BR, IF EOT WAS FOUND
7364 054046  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7368 054052                            ERRHRD  ERRNO,T34ETS,EXPREC     ;EOT BIT (XSTO) NOT SET
     054052  104456                                                            TRAP    C$ERHRD
     054054  001002                                                            .WORD   514
     054056  056467                                                            .WORD   T34ETS
     054060  016334                                                            .WORD   EXPREC
7369 054062                    163$:   CKLOOP                          ;LOOP IF SELECTED
     054062  104406                                                            TRAP    C$CLP1
7370                                   ;
7371                                   ;*************************************************************************
7372                                   ;
7373                                   ;       HOWEVER, THE TMK BIT SHOULD NOW BE CLEAR
7374                                   ;
7375                                   ;*************************************************************************
7376                                   ;
7377 054064  013701  055426            MOV     T34BFR+6,R1             ;PICK UP XSTO
7378 054070  010102                    MOV     R1,R2                   ;SET UP EXPECTED
7379 054072  042702  100000            BIC     #BIT15,R2               ;CLEAR THE TMK BIT ON IN EXPECTED
7380 054076  020102                    CMP     R1,R2                   ;WAS THE BIT ON
7381 054100  001406                    BEQ     165$                    ;BR, IF TMK WAS FOUND
7382 054102  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7386 054106                            ERRHRD  ERRNO,T34TMN,EXPREC     ;COULD NOT CLEAR TMK (ZSTO)
     054106  104456                                                            TRAP    C$ERHRD
     054110  001003                                                            .WORD   515
     054112  057403                                                            .WORD   T34TMN
     054114  016334                                                            .WORD   EXPREC
7387 054116                    165$:   CKLOOP                          ;LOOP IF SELECTED
     054116  104406                                                            TRAP    C$CLP1
7388                                   ;
7389                                   ;*************************************************************************
7390                                   ;
7391                                   ;       NOW SPACE 3 RECORDS IN REVERSE
7392                                   ;
7393                                   ;*************************************************************************
7394                                   ;
```

```
7395 054120  012737  140410  055530          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
7396 054126  012737  000003  055532          MOV     #3,T34WB                ;SPACE THREE RECORD REVERSE
7397 054134  012704  055530                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7398 054140  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7399 054144  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7400 054150  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7401 054154  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7402 054160  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7403 054162  001406                          BEQ     167$                    ;BR, IT MIGHT BE END OF TAPE
7404 054164  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7408 054170                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE RECORDS COMMAND FAILED
     054170  104456                                                                  TRAP    C$ERHRD
     054172  001004                                                                  .WORD   516
     054174  055564                                                                  .WORD   T34POS
     054176  011670                                                                  .WORD   PKTSSR
7409 054200                          167$:   CKLOOP                          ;LOOP IF SELECTED
     054200  104406                                                                  TRAP    C$CLP1
7410                                 ;
7411                                 ;*************************************************************************
7412                                 ;
7413                                 ;       NOW THE EOT BIT SHOULD BE CLEAR
7414                                 ;
7415                                 ;*************************************************************************
7416                                 ;
7417 054202  013701  055426                  MOV     T34BFR+6,R1             ;PICK UP XSTO
7418 054206  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7419 054210  042702  000001                  BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
7420 054214  020102                          CMP     R1,R2                   ;WAS THE BIT OFF
7421 054216  001404                          BEQ     170$                    ;BR, IF EOT WAS FOUND
7425 054220                                  ERRHRD  ERRNO,T34ETC,PKTSSR     ;UNABLE TO CLEAR EOT INDICATION
     054220  104456                                                                  TRAP    C$ERHRD
     054222  001005                                                                  .WORD   517
     054224  056043                                                                  .WORD   T34ETC
     054226  011670                                                                  .WORD   PKTSSR
7426
7427 054230                          170$:   CKLOOP                          ;LOOP IF SELECTED
     054230  104406                                                                  TRAP    C$CLP1
7428                                 ;
7429                                 ;*************************************************************************
7430                                 ;
7431                                 ;       NOW SPACE 4 RECORDS FORWARD, ONCE AGAIN OVER EOT MARKER
7432                                 ;
7433                                 ;*************************************************************************
7434                                 ;
7435 054232  012737  140010  055530          MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1
7436 054240  012737  000004  055532          MOV     #4,T34WB                ;SPACE FOUR RECORDS
7437 054246  012704  055530                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7438 054252  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7439 054256  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7440 054262  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7441 054266  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7442 054272  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7443 054274  001406                          BEQ     190$                    ;BR, IT MIGHT BE END OF TAPE
7444 054276  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7448 054302                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE RECORDS COMMAND FAILED
     054302  104456                                                                  TRAP    C$ERHRD
     054304  001006                                                                  .WORD   518
```

```
                                                                                .WORD   T34POS
                                                                                .WORD   PKTSSR
7449 054312                     190$:   CKLOOP                          ;LOOP IF SELECTED
     054312  104406                                                             TRAP    C$CLP1
7450                            ;
7451                            ;*************************************************************************
7452                            ;
7453                            ;       ONCE AGAIN THE EOT INDICATION SHOULD BE SET IN XSTAT0
7454                            ;
7455                            ;*************************************************************************
7456                            ;
7457 054314  013701  055426            MOV     T34BFR+6,R1             ;PICK UP XST0
7458 054320  010102                    MOV     R1,R2                   ;SET UP EXPECTED
7459 054322  052702  000001            BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7460 054326  020102                    CMP     R1,R2                   ;WAS THE BIT ON
7461 054330  001406                    BEQ     200$                    ;BR, IF EOT WAS FOUND
7462 054332  004737  020070            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7466 054336                            ERRHRD  ERRNO,T34ETS,EXPREC     ;EOT BIT (XST0) NOT SET
     054336  104456                                                             TRAP    C$ERHRD
     054340  001007                                                             .WORD   519
     054342  056467                                                             .WORD   T34ETS
     054344  016334                                                             .WORD   EXPREC
7467 054346                     200$:   CKLOOP                          ;LOOP IF SELECTED
     054346  104406                                                             TRAP    C$CLP1
7468                            ;
7469                            ;*************************************************************************
7470                            ;
7471                            ;       NOW ISSUE A READ REVERSE COMMAND
7472                            ;
7473                            ;*************************************************************************
7474                            ;
7475 054350  012737  140401  055530        MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
7476 054356  013737  003072  055532        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7477 054364  012704  055530               MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7478 054370  010465  177776               MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7479 054374  004737  017110               JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7480 054400  016501  000000               MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7481 054404  012702  000200               MOV     #SSR,R2                 ;SET UP EXPECTED
7482 054410  020102                       CMP     R1,R2                   ;ARE THEY EQUAL
7483 054412  001406                       BEQ     205$                    ;BR, ONLY SSR IS SET
7484 054414  004737  020070               JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7488 054420                               ERRHRD  ERRNO,T34RRE,PKTSSR     ;READ REVERSE COMMAND FAILED
     054420  104456                                                             TRAP    C$ERHRD
     054422  001010                                                             .WORD   520
     054424  055742                                                             .WORD   T34RRE
     054426  011670                                                             .WORD   PKTSSR
7489 054430                     205$:   CKLOOP                          ;LOOP IF SELECTED
     054430  104406                                                             TRAP    C$CLP1
7490                            ;
7491                            ;*************************************************************************
7492                            ;
7493                            ;       NOW ISSUE A READ REVERSE COMMAND
7494                            ;
7495                            ;*************************************************************************
7496 054432  012737  140401  055530        MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
7497 054440  013737  003072  055532        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7498 054446  012704  055530               MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
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TEST  5: OPERATIONS AT EOT

7499 054452  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7500 054456  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7501 054462  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7502 054466  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7503 054472  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7504 054474  001406                        BEQ     210$                    ;BR, IT MIGHT BE END OF TAPE
7505 054476  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7509 054502                                ERRHRD  ERRNO,T34RRE,PKTSSR     ;SECOND READ REVERSE COMMAND FAILED
     054502  104456                                                                TRAP    C$ERHRD
     054504  001011                                                                .WORD   521
     054506  055742                                                                .WORD   T34RRE
     054510  011670                                                                .WORD   PKTSSR
7510 054512                        210$:   CKLOOP                          ;LOOP IF SELECTED
     054512  104406                                                                TRAP    C$CLP1
7511                                       ;
7512                                       ;*************************************************************************
7513                                       ;
7514                                       ;       NOW ISSUE A READ COMMAND
7515                                       ;
7516                                       ;*************************************************************************
7517 054514  012737  140001  055530        MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
7518 054522  013737  003072  055532        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7519 054530  012737  006654  055536        MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (3.5K BYTES)
7520 054536  012704  055530                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7521 054542  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7522 054546  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7523 054552  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7524 054556  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7525 054562  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7526 054564  001406                        BEQ     230$                    ;BR, IT MIGHT BE END OF TAPE
7527 054566  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7531 054572                                ERRHRD  ERRNO,T34RRF,PKTSSR     ;READ FORWARD COMMAND FAILED
     054572  104456                                                                TRAP    C$ERHRD
     054574  001012                                                                .WORD   522
     054576  057466                                                                .WORD   T34RRF
     054600  011670                                                                .WORD   PKTSSR
7532 054602                        230$:   CKLOOP                          ;LOOP IF SELECTED
     054602  104406                                                                TRAP    C$CLP1
7533 054604  012737  140001  055530        MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
7534 054612  013737  003072  055532        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7535 054620  012737  006654  055536        MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (3.5K BYTES)
7536 054626  012704  055530                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7537 054632  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7538 054636  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7539 054642  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7540 054646  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7541 054652  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7542 054654  001406                        BEQ     235$                    ;BR, IT MIGHT BE END OF TAPE
7543 054656  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7547 054662                                ERRHRD  ERRNO,T34RRF,PKTSSR     ;SECOND READ FORWARD FAILED
     054662  104456                                                                TRAP    C$ERHRD
     054664  001013                                                                .WORD   523
     054666  057466                                                                .WORD   T34RRF
     054670  011670                                                                .WORD   PKTSSR
7548 054672                        235$:   CKLOOP                          ;LOOP IF SELECTED
     054672  104406                                                                TRAP    C$CLP1
7549                                       ;
```

```
                                ;*****************************************************************************
                                ;
                                ;       THE EOT BIT SHOULD HAVE REMAINED SET
                                ;
                                ;*****************************************************************************
                                ;
054674  013701  055426                  MOV     T34BFR+6,R1             ;PICK UP XSTO
054700  010102                          MOV     R1,R2                   ;SET UP EXPECTED
054702  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
054706  020102                          CMP     R1,R2                   ;WAS THE BIT ON
054710  001406                          BEQ     240$                    ;BR, IF EOT WAS FOUND
054712  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
054716                                  ERRHRD  ERRNO,T34ETZ,EXPREC     ;EOT BIT (XSTO) NOT SET
                                                                                TRAP    C$ERHRD
054716  104456                                                                  .WORD   524
054720  001014                                                                  .WORD   T34ETZ
054722  056555                                                                  .WORD   EXPREC
054724  016334
054726                          240$:   CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
054726  104406
                                ;
                                ;*****************************************************************************
                                ;
                                ;       NOW ISSUE A SPACE RECORDS REVERSE FOR 5 RECORDS
                                ;
                                ;*****************************************************************************
                                ;
054730  012737  140410  055530           MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD.
054736  012737  000005  055532           MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
054744  012704  055530                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
054750  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
054754  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
054760  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
054764  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
054770  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
054772  001406                          BEQ     250$                    ;BR, IT MIGHT BE END OF TAPE
054774  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
055000                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE 5 RECORDS REVERSE COMMAND FAILED
                                                                                TRAP    C$ERHRD
055000  104456                                                                  .WORD   525
055002  001015                                                                  .WORD   T34POS
055004  055564                                                                  .WORD   PKTSSR
055006  011670
055010                          250$:   CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
055010  104406
                                ;
                                ;*****************************************************************************
                                ;
                                ;       EOT SHOULD BE CLEAR AS WE ARE NOW IN FRONT OF EOT
                                ;
                                ;*****************************************************************************
                                ;
055012  013701  055426                  MOV     T34BFR+6,R1             ;PICK UP XSTO
055016  010102                          MOV     R1,R2                   ;SET UP EXPECTED
055020  042702  000001                  BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
055024  020102                          CMP     R1,R2                   ;WAS THE BIT ON
055026  001406                          BEQ     260$                    ;BR, IF EOT WAS FOUND
055030  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
055034                                  ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
```

```
                                                                                TRAP    C$ERHRD
        055034  104456                                                        .WORD   526
        055036  001016                                                        .WORD   T34EfC
        055040  056043                                                        .WORD   EXPREC
        055042  016334
 7606   055044                  260$:   CKLOOP                  ;LOOP IF SELECTED
        055044  104406                                                        TRAP    C$CLP1
 7607                            ;
 7608                            ;*******************************************************************************
 7609                            ;
 7610                            ;       NOW SPACE FORWARD 5 RECORDS AGAIN
 7611                            ;
 7612                            ;*******************************************************************************
 7613                            ;
 7614   055046  012737  140010  055530          MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1 CMD.
 7615   055054  012737  000005  055532          MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
 7616   055062  012704  055530                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7617   055066  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7618   055072  004737  017110                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7619   055076  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7620   055102  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 7621   055106  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 7622   055110  001406                          BEQ     270$                    ;BR, IT MIGHT BE END OF TAPE
 7623   055112  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7627   055116                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE RECORDS FORWARD COMMAND FAILED
                                                                                TRAP    C$ERHRD
        055116  104456                                                          .WORD   527
        055120  001017                                                          .WORD   T34POS
        055122  055564                                                          .WORD   PKTSSR
        055124  011670
 7628   055126                  270$:   CKLOOP                  ;LOOP IF SELECTED
        055126  104406                                                          TRAP    C$CLP1
 7629                            ;
 7630                            ;*******************************************************************************
 7631                            ;
 7632                            ;       EOT SHOULD BE SET AGAIN
 7633                            ;
 7634                            ;*******************************************************************************
 7635                            ;
 7636   055130  013701  055426                  MOV     T34BFR+6,R1             ;PICK UP XSTO
 7637   055134  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 7638   055136  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 7639   055142  020102                          CMP     R1,R2                   ;WAS THE BIT ON
 7640   055144  001404                          BEQ     280$                    ;BR, IF EOT WAS FOUND
 7644   055146                                  ERRHRD  ERRNO,T34ETS,PKTSSR     ;EOT FAILED TO SET AFTER SPACE CMD.
                                                                                TRAP    C$ERHRD
        055146  104456                                                          .WORD   528
        055150  001020                                                          .WORD   T34ETS
        055152  056467                                                          .WORD   PKTSSR
        055154  011670
 7645   055156                  280$:   CKLOOP                  ;LOOP IF SELECTED
        055156  104406                                                          TRAP    C$CLP1
 7646                            ;*******************************************************************************
 7647                            ;
 7648                            ;       NOW ISSUE A SKIP FILE MARKS REVERSE COMMAND, BUT WE KNOW THAT
 7649                            ;       THERE AREN'T ANY THERE SO WE SHOULD RUN INTO BOT
 7650                            ;
 7651                            ;*******************************************************************************
 7652   055160  012737  141410  055530          MOV     #141410,T34PK3          ;SKIP FILE MARKS REVERSE,ACK,CVC=1 COMMAND
 7653   055166  012737  000003  055532          MOV     #3,T34RB                ;NUMBER OF FILE MARKS
```

```
                                        MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
                                        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
055544                                  MOV     #65000.,T34DLY          ;SET UP DELAY COUNTER
                                285$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
                                        MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
                                        BIT     #SSR,R1                 ;CHECK FOR SSR SET
                                        BNE     286$                    ;BR, WHEN SSR IS SET
                                        DELAY   250                     ;WAIT ABOUT .25 SECONDS
055230  012727  000250                                                          MOV     #250,(PC)+
055234  000000                                                                  .WORD   0
055236  013727  002116                                                          MOV     L$DLY,(PC)+
055242  000000                                                                  .WORD   0
055244  005367  177772                                                          DEC     -6(PC)
055250  001375                                                                  BNE     .-4
055252  005367  177756                                                          DEC     -22(PC)
055256  001367                                                                  BNE     .-20
055260  005337  055544                  DEC     T34DLY                  ;BUMP COUNTER
055264  001352                          BNE     285$                    ;BR, IF MORE TO COUNT
055266  012702  100204          286$:   MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED TAPE STATUS ALERT
055272  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
055274  001407                          BEQ     300$                    ;BR, IT MIGHT BE END OF TAPE
055276  005303                          DEC     R3                      ;DEC RECORD COUNTER
055300  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
055304                                  ERRHRD  ERRNO,T34WOL,PKTSSR     ;SKIP FILE MARK REVERSE CMD. FAILED
055304  104456                                                                  TRAP    C$ERHRD
055306  001021                                                                  .WORD   529
055310  057540                                                                  .WORD   T34WOL
055312  011670                                                                  .WORD   PKTSSR
                        ;*******************************************************************************
                        ;
                        ;       THE BOT INDICATION BETTER BE SET
                        ;
                        ;*******************************************************************************
055314                  300$:   CKLOOP                                  ;LOOP IF SELECTED
055314  104406                                                                  TRAP    C$CLP1
055316  013701  055426                  MOV     T34BFR+6,R1             ;PICK UP XSTO
055322  010102                          MOV     R1,R2                   ;SET UP EXPECTED
055324  052702  000002                  BIS     #BIT1,R2                ;SET THE BOT BIT ON IN EXPECTED
055330  020102                          CMP     R1,R2                   ;WAS THE BIT ON
055332  001406                          BEQ     320$                    ;BR, IF BOT WAS FOUND
055334  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
055340                                  ERRHRD  ERRNO,T34BOT,EXPREC     ;BOT NOT SET AFTER SPACE CMD.
055340  104456                                                                  TRAP    C$ERHRD
055342  001022                                                                  .WORD   530
055344  056120                                                                  .WORD   T34BOT
055346  016334                                                                  .WORD   EXPREC
055350                  320$:   CKLOOP                                  ;LOOP IF SELECTED
055350  104406                                                                  TRAP    C$CLP1
055352                  600$:   ENDSUB                                  ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
055352                                                                          L10060:
055352  104403                                                                  TRAP    C$ESUB
055354  004737  017344                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
055360  103002                          BCC     163$                    ;BR, IF NO LOOP REQUIRED
055362  000137  052706                  JMP     T34LOOP                 ;EXECUTE AGAIN
055366                          163$:   EXIT    TST                     ;ALL DONE THIS TEST
055366  104432                                                                  TRAP    C$EXIT
055370  002404                                                                  .WORD   L10057-.
```

```
                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
                                        .BLKB   10-<.-TUV2A87>
                                T34PACKET:                              ;COMMAND PACKET FOR TEST
                                        .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH ACK
                                        .WORD   T34DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
                                        .WORD   0
                                        .WORD   8.                      ;STARTING VALUE OF BLOCK SIZE
                                T34DATA:                                ;CHARACTERISTICS DATA BLOCK
                                        .WORD   T34BFR                  ;ADDRESS OF MESSAGE BUFFER
                                        .WORD   0
                                        .WORD   10.                     ;LENGTH OF MESSAGE BUFFER
                                        .WORD   0
                                T34BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
                                        .BLKB   10-<.-TUV2A87>
                                T34PK2:
                                        .WORD   100006                  ;WRITE SUB SYS MEM COMMAND, AND ACK
                                        .WORD   T34BF2                  ;ADDRESS OF SELECT BLOCK DATA
                                        .WORD   0
                                        .WORD   6.                      ;SIZE OF DATA PACKET

                                        .BLKB   10-<.-TUV2A87>
                                T34PK3:
                                        .WORD   100005                  ;WRITE COMMAND,  AND ACK
                                T34RB:
                                T34WB:  .WORD   0                       ;ADDRESS OF WRITE/READ BUFFER
                                        .WORD   0
                                T34SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                        .EVEN
                                ;
                                T34RSZ: .WORD   0                       ;LARGEST TAPE RECORD IN BYTES
                                T34CNT: .WORD   0                       ;TAPE RECORD COUNTER
                                T34DLY: .WORD   0                       ;DELAY COUNTER
                                ;
                                ;
                                T34BF2:
                                T34BS0: .BYTE   10                      ;BSEL0 AREA
                                T34BS1: .BYTE   200                     ;BSEL1 AREA
                                T34S2:  .WORD   0                       ;SEL 2 AREA
                                T34S3:  .WORD   0                       ;DATA AREA
                                ;
                                ;
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

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

```
7758
7759                                    ;+
7760                                    ;LOCAL TEXT MESSAGES FOR TEST
7761                                    ;-
7762
7763
7764 055564  124  123  123  T34POS: .ASCIZ  'TSSR Incorrect After Position (SPACE RECORDS) Command'
7765 055652  127  122  111  T34ETO: .ASCIZ  'WRITE TAPE MARK Beyond EOT Failed To Set EOT Bit (XSTO)'
7766 055742  122  105  101  T34RRE: .ASCIZ  'READ REVERSE Command At EOT Didn''t Give Normal Termination (TSSR)'
7767 056043  125  156  141  T34ETC: .ASCIZ  'Unable To Clear EOT Indication, (XSTO) Bit 0'
7768 056120  123  153  151  T34BOT: .ASCIZ  'Skip File Mark Reverse (over entire tape) Failed To Set BOT (XSTO) Bit'
7769 056227  127  122  111  T34WTM: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set Tape Status Alert'
7770 056316  127  122  111  T34ET2: .ASCIZ  'WRITE DATA Beyond EOT Failed To Set Tape Status Alert'
7771 056404  127  122  111  T34ETN: .ASCIZ  'WRITE DATA Beyond EOT Failed To Set EOT Bit (XSTO)'
7772 056467  123  120  101  T34ETS: .ASCIZ  'SPACE RECORDS Beyond EOT Failed To Set EOT Bit (XSTO)'
7773 056555  122  105  101  T34ETZ: .ASCIZ  'READ DATA Beyond EOT Failed To Set EOT Bit (XSTO)'
7774 056637  120  117  123  T34TMK: .ASCIZ  'POSITION Command Beyond EOT Into A Tape Mark Failed To Set TMK (XSTO)'
7775 056745  105  117  124  T34ET:  .ASCIZ  'EOT Not Found In 65000 3.5K Writes, (Use Shorter Tape)'
7776 057034  127  122  111  T34EOT: .ASCIZ  'WRITE DATA OVER EOT GAVE NO TAPE STATUS ALERT'
7777
7778 057112  117  160  145  TST34ID:        .ASCIZ  'Operations At EOT'
7779 057134  124  123  123  T34RWN: .ASCIZ  'TSSR Incorrect After Position (REWIND) Command'
7780 057213  124  123  123  T34STM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Beyond EOT Mark'
7781 057307  105  117  124  T34STE: .ASCIZ  'EOT (XSTO) Not Set After SKIP TAPE MARK REVERSE, Beyond EOT'
7782 057403  125  156  141  T34TMN: .ASCIZ  'Unable To Clear TMK (XSTO) Bit Using Space Command'
7783 057[illegible]  124  123  123  T34RRF: .ASCIZ  'TSSR Incorrect After READ FORWARD Command'
7784 057540  124  123  123  T34WOL: .ASCIZ  'TSSR Incorrect After SKIP FILE MARK REVERSE'
7785                                        .EVEN
7786                                    ;+
7787                                    ;
7788                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
7789                                    ;WRITE SUBSYSTEM MEMORY COMMAND
7790                                    ;
7791                                    ;-
7792
7793 057614                             T34REST:
7794 057614                                     SAVREG                          ;SAVE THE REGISTERS
7795 057620  012701  055400                     MOV     #T34PACKET,R1           ;START OF THE PACKET
7796 057624  012721  100004                     MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
7797 057630  012721  055410                     MOV     #T34DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
7798 057634  005021                             CLR     (R1)+                   ;EXTENDED ADDRESS
7799 057636  012721  000012                     MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
7800 057642  012721  055420                     MOV     #T34BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
7801 057646  005021                             CLR     (R1)+
7802 057650  012721  000024                     MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
7803 057654  005021                             CLR     (R1)+
7804 057656  012711  000000                     MOV     #0,(R1)                 ;SELECT DRIVE ZERO
7805 057662  012702  000030                     MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
7806 057666  012762  177777  055420  64$:      MOV     #177777,T34BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
7807 057674  005742                             TST     -(R2)                   ;BUMP DOWN TO NEXT LOCATION
7808 057676  020227  000000                     CMP     R2,#0                   ;R2 AT ZERO YET
7809 057702  001371                             BNE     64$                     ;KEEP GOING UNTIL DONE
7810 057704  000207                             RTS     PC                      ;RETURN
7811
7812
7813 057706                             T34RT2:
7814 057706                                     SAVREG                          ;SAVE THE REGISTERS
```

```
7815 057712  012701  055510                MOV     #T34PK2,R1              ;START OF THE PACKET
7816 057716  012721  100006                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
7817 057722  012721  055546                MOV     #T34BF2,(R1)+           ;ADDRESS OF DATA BLOCK
7818 057726  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
7819 057730  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
7820 057734  012701  055546                MOV     #T34BF2,R1              ;POINT TO DATA SEL AREA
7821 057740  005021                        CLR     (R1)+
7822 057742  005021                        CLR     (R1)+
7823 057744  005011                        CLR     (R1)
7824 057746  000207                        RTS     PC                      ;RETURN
7825 057750                        T34RT3:
7826 057750                                SAVREG                          ;SAVE THE REGISTERS
7827 057754  012701  055530                MOV     #T34PK3,R1              ;START OF THE PACKET
7828 057760  012721  100005                MOV     #100005,(R1)+           ;WRITE  TAPE. WITH ACK
7829 057764  005021                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
7830 057766  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
7831 057770  005011                        CLR     (R1)                    ;SIZE OF DATA BLOCK
7832 057772  000207                        RTS     PC                              ;RETURN
7833 057774                                ENDTST
     057774                                                          L10057:
     057774  104401                                                          TRAP    C$ETST
```

```
                                        .SBTTL  TEST  6: FUNCTION TIMING
                                ;+
                                ;
                                ;THIS TEST VERIFIES THAT THE TAPE TRANSPORT SEEMS TO BE WRITING
                                ;RECORDS, GAPS, AND EXTENDED GAPS OF THE PROPER LENGTH. BOTH LOW
                                ;AND HIGH SPEED MODES ARE TESTED. IT IS ALSO VERIFIED THAT A
                                ;SPACE RECORDS COMMAND WITH A RECORD COUNT OF 80 OR MORE, AND A
                                ;SKIP TAPE MARKS COMMAND WITH A COUNT OF 2 OF MORE, OPERATE THE
                                ;TAPE IN HIGH-SPEED MODE. THIS TEST CAN ONLY BE RUN IF A
                                ;REAL-TIME CLOCK IS AVAILIABLE ON THE SYSTEM. THE TEST OPERATES BY
                                ;TIMING VARIOUS TAPE-MOTION OPERATIONS, USING A NUMBER OF
                                ;DIFFERENT TEST RECORD LENGTHS.
                                ;
                                ;
                                ;-
057776                                  BGNTST
057776                                                                  T6::
057776  005037  002170                 CLR     FATFLG                 ;CLEAR FATAL ERROR FLAG
060002  005037  003100                 CLR     KTFLG                  ;HOLD OFF KT11
060006  012737  005672  002146         MOV     #EPRT1,EPRTSW          ;PRIMARY ERROR MESSAGE
060014  004737  020234                 JSR     PC,KTOFF                       ;TURN KT OFF
060020  012700  064223                 MOV     #TST37ID,R0            ;ASCII MESSAGE TO IDENTIFY TEST
060024  004737  017376                 JSR     PC,TSTSETUP            ;DO INITIAL TEST SETUP
060030  012737  000002  002164         MOV     #2,LOOPCNT             ;PERFORM 2 ITERATIONS
060036  005037  061266                 CLR     T37CNT                 ;CLEAR TAPE RECORD COUNTER
                                ;+
                                ;
                                ;TEST 6, SUBTEST 1
                                ;
                                ;
                                ;
                                ;
                                ;-

060042                          T37LOOP:
```

```
7875 060042                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     060042                                                                  T6.1:
     060042  104402                                                                TRAP    C$BSUB
7876 060044  005037  002172                  CLR     INTRECV         ;INTERRUPT INDICATOR
7877 060050  005037  061266                  CLR     T37CNT          ;TIMER FOR WRITE DATA SPACING
7878 060054  005037  061270                  CLR     T37CNU          ;TIMER FOR WRITE DATA RETRY SPACING
7879 060060  004737  064244                  JSR     PC,T37REST      ;SET COMMAND PACKET
7880 060064  004737  064336                  JSR     PC,T37RT2       ;SET UP OTHER COMMAND PACKET
7881 060070  004737  064400                  JSR     PC,T37RT3       ;SET UP OTHER COMMAND PACKET
7882 060074  012737  176750  061272          MOV     #65000.,T37DLY  ;SET UP DELAY COUNTER
7883 060102  004737  016634          10$:    JSR     PC,SDFINIT      ;DO INITIALIZE ON CONTROLLER
7884 060106  103426                  BCS     20$             ;BR IF INIT WAS OK
7885 060110                          DELAY   250             ;DELAY ABOUT .25 SEC
     060110  012727  000250                                                  MOV     #250,(PC)+
     060114  000000                                                          .WORD   0
     060116  013727  002116                                                  MOV     L$DLY,(PC)+
     060122  000000                                                          .WORD   0
     060124  005367  177772                                                  DEC     -6(PC)
     060130  001375                                                          BNE     .-4
     060132  005367  177756                                                  DEC     -22(PC)
     060136  001367                                                          BNE     .-20
7886 060140  005337  061272                  DEC     T37DLY          ;BUMP COUNTER
7887 060144  001356                  BNE     10$             ;BR, IF COUNTER NOT DONE
7888 060146  004737  020070                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
7892 060152  010001                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
7893 060154                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     060154  104455                                                                TRAP    C$ERDF
     060156  001131                                                          .WORD   601
     060160  003550                                                          .WORD   SFIERR
     060162  011656                                                          .WORD   SFIMSG
7894 060164                  20$:
7895
7896 060164  012704  061110                  MOV     #T37PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
7897 060170  004737  010322                  JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
7898 060174  103407                  BCS     23$             ;BR, IF COMMAND ISSUED OK
7899 060176  004737  020070                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
7903 060202  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
7904 060204                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     060204  104456                                                                TRAP    C$ERHRD
     060206  001132                                                          .WORD   602
     060210  004754                                                          .WORD   WRTMSG
     060212  011656                                                          .WORD   SFIMSG
7905 060214                  23$:    CKLOOP                          ;LOOP IF SELECTED
     060214  104406                                                                TRAP    C$CLP1
7906 060216  004737  010424                  JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
7907 060222  103411                  BCS     30$             ;BR, IF NO PROBLEM
7908 060224  016501  000000                  MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
7909 060230  010004                  MOV     R0,R4           ;GET PACKET ADDRESS
7910 060232  004737  020070                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
7914 060236                          ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
     060236  104456                                                                TRAP    C$ERHRD
     060240  001133                                                          .WORD   603
     060242  062445                                                          .WORD   T37RWN
     060244  011670                                                          .WORD   PKTSSR
7915 060246                  30$:    CKLOOP                          ;LOOP IF SELECTED
     060246  104406                                                                TRAP    C$CLP1
7916 060250  013701  061136                  MOV     T37BFR+6,R1     ;PICK UP XSTO
```

```
                                        MOV     R1,R2                   ;SET UP EXPECTED
                                        BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
                                        CMP     R1,R2                   ;DOES EXP = REC'D
                                        BEQ     40$                     ;BR, IF EQUAL (OK)
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                        ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                                                                                TRAP    C$ERHRD
                                                                                .WORD   604
                                                                                .WORD   T37BOT
                                                                                .WORD   EXPREC
                                40$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
                                        MOV     #100.,R3                ;NUMBER OF RECORDS TO BE WRITTEN
                                        MOV     FREE,T37WB              ;STARTING WRITE BUFFER ADDRESS
                                65$:    MOV     #140005,T37PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
                                        MOV     #T37PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
                                        MOV     #600.,T37SZ             ;SET UP RECORD SIZE IN PACKET
                                        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
                                        JSR     PC,WAITF                ;WAIT FOR SSR TO SET
                                        MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
                                        MOV     #SSR,R2                 ;SET UP EXPECTED
                                        CMP     R1,R2                   ;ARE THEY EQUAL
                                        BEQ     70$                     ;BR, IF OK
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                                                        ;SOFT ERROR, DON'T CARE ABOUT WRITE
                                                                        ;COMMAND'S RESULTS - CHECKING THE
                                                                        ;THE FUNCTION TIMING
                                        ERRSOFT ERRNO,T37WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
                                                                                TRAP    C$ERSOF1
                                                                                .WORD   605
                                                                                .WORD   T37WDC
                                                                                .WORD   PKTSSR
                                70$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
                                        DEC     R3                      ;DEC RECORD COUNTER
                                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
                                        JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
                                        BCS     130$                    ;BR, IF NO PROBLEM
                                        MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
                                        MOV     R0,R4                   ;GET PACKET ADDRESS
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                        ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
                                                                                TRAP    C$ERHRD
                                                                                .WORD   606
                                                                                .WORD   T37RWN
                                                                                .WORD   PKTSSR
                                130$:   CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
                                        MOV     T37BFR+6,R1             ;PICK UP XSTO
                                        MOV     R1,R2                   ;SET UP EXPECTED
                                        BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
                                        CMP     R1,R2                   ;DOES EXP = REC'D
                                        BEQ     140$                    ;BR, IF EQUAL (OK)
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                        ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                                                                                TRAP    C$ERHRD
                                                                                .WORD   607
```

```
                060464  062141                                                          .WORD   T37BOT
                060466  016334                                                          .WORD   EXPREC
   7969         060470                  140$:   CKLOOP                  ;LOOP IF SELECTED
                060470  104406                                                          TRAP    C$CLP1
   7970         060472  012704  061240          MOV     #T37PK3,R4      ;SET UP PACKET ADDRESS
   7971         060476  012737  000037  061242  MOV     #31.,T37RB      ;SET UP RECORDS TO SPACE OVER
   7972         060504  012737  140010  061240  MOV     #140010,T37PK3  ;ACK,CVC=1,SPACE FORWARD COMMAND
   7973         060512  010465  177776  150$:   MOV     R4,TSDB(R5)     ;ISSUE COMMAND
   7974         060516  005237  061266  152$:   INC     T37CNT          ;BUMP TIMER
   7975         060522                          DELAY   1               ;DELAY ABOUT 100US
                060522  012727  000001                                                  MOV     #1,(PC)+
                060526  000000                                                          .WORD   0
                060530  013727  002116                                                  MOV     L$DLY,(PC)+
                060534  000000                                                          .WORD   0
                060536  005367  177772                                                  DEC     -6(PC)
                060542  001375                                                          BNE     .-4
                060544  005367  177756                                                  DEC     -22(PC)
                060550  001367                                                          BNE     .-20
   7976         060552  016501  000000          MOV     TSSR(R5),R1     ;GET TSSR
   7977         060556  032701  000200          BIT     #SSR,R1         ;CHECK FOR TSSR'S SSR SET
   7978         060562  001755                  BEQ     152$            ;KEEP COUNTING UNTIL SET
   7979         060564  012702  000200          MOV     #SSR,R2         ;SET UP EXPECTED
   7980         060570  020201                  CMP     R2,R1           ;WAS EVERYTHING OK
   7981         060572  001406                  BEQ     160$            ;BR. IF ALL IS WELL
   7982         060574  004737  020070          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
   7986         060600                          ERRHRD  ERRNO,T37SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
                060600  104456                                                          TRAP    C$ERHRD
                060602  001140                                                          .WORD   608
                060604  063707                                                          .WORD   T37SCF
                060606  011670                                                          .WORD   PKTSSR
   7987         060610                  160$:   CKLOOP                  ;LOOP IF SELECTED
                060610  104406                                                          TRAP    C$CLP1
   7988         060612  004737  010424          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
   7989         060616  103411                  BCS     170$            ;BR. IF NO PROBLEM
   7990         060620  010004                  MOV     R0,R4           ;GET PACKET ADDRESS
   7991         060622  016501  000000          MOV     TSSR(R5),R1     ;GET STATUS FROM TSSR
   7992         060626  004737  020070          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
   7996         060632                          ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
                060632  104456                                                          TRAP    C$ERHRD
                060634  001141                                                          .WORD   609
                060636  062445                                                          .WORD   T37RWN
                060640  011670                                                          .WORD   PKTSSR
   7997         060642                  170$:   CKLOOP                  ;LOOP IF SELECTED
                060642  104406                                                          TRAP    C$CLP1
   7998         060644  013701  061136          MOV     T37BFR+6,R1     ;PICK UP XSTO
   7999         060650  010102                  MOV     R1,R2           ;SET UP EXPECTED
   8000         060652  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
   8001         060656  020102                  CMP     R1,R2           ;DOES EXP = REC'D
   8002         060660  001406                  BEQ     175$            ;BR. IF EQUAL (OK)
   8003         060662  004737  020070          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
   8007         060666                          ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                060666  104456                                                          TRAP    C$ERHRD
                060670  001142                                                          .WORD   610
                060672  062141                                                          .WORD   T37BOT
                060674  016334                                                          .WORD   EXPREC
   8008         060676                  175$:   CKLOOP                  ;LOOP IF SELECTED
                060676  104406                                                          TRAP    C$CLP1
```

```
8009 060700  012704  061240                    MOV     #T37PK3,R4              ;SET UP PACKET ADDRESS
8010 060704  012737  000121  061242            MOV     #81.,T37RB              ;SET UP RECORDS TO SPACE OVER
8011 060712  012737  140010  061240            MOV     #140010,T37PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
8012 060720  010465  177776          250$:     MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8013 060724  005237  061270          252$:     INC     T37CNU                  ;BUMP TIMER
8014 060730                                    DELAY   1                       ;DELAY ABOUT 100US
     060730  012727  000001                                                                            MOV     #1,(PC)+
     060734  000000                                                                                    .WORD   0
     060736  013727  002116                                                                            MOV     L$DLY,(PC)+
     060742  000000                                                                                    .WORD   0
     060744  005367  177772                                                                            DEC     -6(PC)
     060750  001375                                                                                    BNE     .-4
     060752  005367  177756                                                                            DEC     -22(PC)
     060756  001367                                                                                    BNE     .-20
8015 060760  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR
8016 060764  032701  000200                    BIT     #SSR,R1                 ;CHECK FOR TSSR'S SSR SET
8017 060770  001755                            BEQ     252$                    ;KEEP COUNTING UNTIL SET
8018 060772  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
8019 060776  020201                            CMP     R2,R1                   ;WAS EVERYTHING OK
8020 061000  001406                            BEQ     260$                    ;BR, IF ALL IS WELL
8021 061002  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8025 061006                                    ERRHRD  ERRNO,T37SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
     061006  104456                                                                                    TRAP    C$ERHRD
     061010  001143                                                                                    .WORD   611
     061012  063707                                                                                    .WORD   T37SCF
     061014  011670                                                                                    .WORD   PKTSSR
8026 061016                          260$:     CKLOOP                          ;LOOP IF SELECTED
     061016  104406                                                                                    TRAP    C$CLP1
8027 061020  013701  061266                    MOV     T37CNT,R1               ;TIME FOR WRITE SPACING
8028 061024  013702  061270                    MOV     T37CNU,R2               ;TIME FOR WRITE RETRY SPACING
8029 061030  042701  000077                    BIC     #000077,R1              ;SETTING UP CONSTANTS
8030 061034  042702  000077                    BIC     #000077,R2              ;SETTING UP CONSTANTS
8031 061040  020102                            CMP     R1,R2                   ;CHECK FOR DIFFERENCE
8032 061042  003406                            BLE     300$                    ;BR, IF GOOD  CHECK
8033 061044  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8037 061050                                    ERRHRD  ERRNO,T37TIM,EXPREC     ;TIME WAS NOT DIFFERENT ENOUGH
     061050  104456                                                                                    TRAP    C$ERHRD
     061052  001144                                                                                    .WORD   612
     061054  062234                                                                                    .WORD   T37TIM
     061056  016334                                                                                    .WORD   EXPREC
8038 061060                          300$:     CKLOOP                          ;LOOP IF SELECTED
     061060  104406                                                                                    TRAP    C$CLP1
8039 061062                                    ENDSUB                          ;<<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
     061062                                                                                   L10062:
     061062  104403                                                                                    TRAP    C$ESUB
8040                                 ;
8041 061064  004737  017344                    JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
8042 061070  103002                            BCC     163$                    ;BR, IF NO LOOP REQUIRED
8043 061072  000137  060042                    JMP     T37LOOP                 ;EXECUTE AGAIN
8044 061076                          163$:     EXIT    TST                     ;ALL DONE THIS TEST
     061076  104432                                                                                    TRAP    C$EXIT
     061100  003322                                                                                    .WORD   L10061-.
```

```
8046                                    ;+
8047                                    ;LOCAL STORAGE FOR THIS TEST
8048                                    ;-
8050 061102                                     .BLKB   10-<.-TUV2A&7>
8052 061110                             T37PACKET:                      ;COMMAND PACKET FOR TEST
8053 061110  100004                             .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
8054 061112  061120                             .WORD   T37DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
8055 061114  000000                             .WORD   0
8056 061116  000012                             .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
8057 061120                             T37DATA:                        ;CHARACTERISTICS DATA BLOCK
8058 061120  061130                             .WORD   T37BFR          ;ADDRESS OF MESSAGE BUFFER
8059 061122  000000                             .WORD   0
8060 061124  000024                             .WORD   20.             ;LENGTH OF MESSAGE BUFFER
8061 061126  000000                             .WORD   0
8062 061130                             T37BFR: .BLKW   25.             ;MESSAGE BUFFER
8063                                    ;
8064                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
8065                                    ;
8067 061212                                     .BLKB   10-<.-TUV2A&7>
8069 061220                             T37PK2:
8070 061220  100006                             .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
8071 061222  061250                             .WORD   T37BF2          ;ADDRESS OF SELECT BLOCK DATA
8072 061224  000000                             .WORD   0
8073 061226  000006                             .WORD   6.              ;SIZE OF DATA PACKET
8074
8076 061230                                     .BLKB   10-<.-TUV2A&7>
8078 061240                             T37PK3:
8079 061240  100005                             .WORD   100005          ;REREAD COMMAND, AND ACK
8080 061242                             T37RB:
8081 061242  003072                     T37WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
8082 061244  000000                             .WORD   0
8083 061246  000000                     T37SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
8084                                            .EVEN
8085                                    ;
8086                                    ;
8087                                    ;
8088 061250                             T37BF2:
8089 061250     010                     T37BS0: .BYTE   10              ;BSEL0 AREA
8090 061251     200                     T37BS1: .BYTE   200             ;BSEL1 AREA
8091 061252  000000                     T37S2:  .WORD   0               ;SEL 2 AREA
8092 061254  000000                     T37S3:  .WORD   0               ;DATA AREA
8093                                    ;
8094                                    ;
8095                                            .EVEN
8096                                    ;TAPE MOTION PACKET COMMAND VALUES
8097
8098 061256  100205                     T37RN:  .WORD   100205          ;REREAD DATA (NEXT)
8099 061260  100605                     T37WDR: .WORD   100605          ;REREAD DATA RETRY
8100 061262  102205                     T37CON: .WORD   102205          ;WRITE CONTINOUS
8101 061264  177777                             .WORD   177777          ;END OF DATA
8102
8103                                    ;
8104 061266  000000                     T37CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
8105 061270  000000                     T37CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
8106 061272  000000                     T37DLY: .WORD   0               ;DELAY COUNTER
8107
```

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

061274  124  141  160  T37WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
061362  124  123  123  T37RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
061431  122  105  122  T37RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
061526  120  117  123  T37SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
061610  122  111  102  T37LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
061660  124  123  123  T37WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
061735  111  154  154  T37LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
062016  122  105  122  T37SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
062052  124  123  123  T37WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command,At BOT'
062141  124  141  160  T37BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
062234  127  122  111  T37TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
062311  122  105  122  T37EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
062370  124  123  123  T37TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
062445  122  145  167  T37RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
062514  122  101  115  T37RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
062567  124  123  123  T37AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
062636  104  162  151  T37OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
062711  124  123  123  T37WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
063001  124  123  123  T37WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
063054  103  126  103  T37VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
063127  124  123  102  T37BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
063202  127  122  111  T37WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
063271  122  145  141  T37LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
063353  122  145  141  T37LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
063435  122  145  163  T37PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
063523  122  145  141  T37TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
063611  127  122  111  T37NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
063707  124  123  123  T37SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
063764  124  123  123  T37TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
064046  124  123  123  T37WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
064126  104  141  164  T37DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
064223  106  165  156  TST37ID:        .ASCIZ  'Function Timing'
                                .EVEN
                                ;+
                                ;
                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                ;WRITE SUBSYSTEM MEMORY COMMAND
                                ;
                                ;-

064244                          T37REST:
064244                                  SAVREG                          ;SAVE THE REGISTERS
064250  012701  061110                  MOV     #T37PACKET,R1           ;START OF THE PACKET
064254  012721  100004                  MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
064260  012721  061120                  MOV     #T37DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
064264  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
064266  012721  000012                  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
064272  012721  061130                  MOV     #T37BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
064276  005021                          CLR     (R1)+
064300  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
064304  005021                          CLR     (R1)+
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```
8166 064306  012711  000000                MOV     #0,(R1)                 ;SELECT DRIVE ZERO
8167 064312  012702  000030                MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
8168 064316  012762  177777  061130  64$:  MOV     #177777,T37BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
8169 064324  005742                        TST     -(R2)                   ;NEXT LOCATION
8170 064326  022702  000000                CMP     #0,R2                   ;AT END OF LOOP YET
8171 064332  001371                        BNE     64$                     ;KEEP GOING UNTIL DONE
8172 064334  000207                        RTS     PC                      ;RETURN
8173
8174
8175 064336                        T37RT2:
8176 064336                                SAVREG                          ;SAVE THE REGISTERS
8177 064342  012701  061220                MOV     #T37PK2,R1              ;START OF THE PACKET
8178 064346  012721  100006                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
8179 064352  012721  061250                MOV     #T37BF2,(R1)+           ;ADDRESS OF DATA BLOCK
8180 064356  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
8181 064360  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
8182 064364  005021                        CLR     (R1)+
8183 064366  012701  061250                MOV     #T37BF2,R1              ;POINT TO DATA SEL AREA
8184 064372  005021                        CLR     (R1)+
8185 064374  005011                        CLR     (R1)
8186 064376  000207                        RTS     PC                      ;RETURN
8187 064400                        T37RT3:
8188 064400                                SAVREG                          ;SAVE REGISTERS
8189 064404  012701  061240                MOV     #T37PK3,R1              ;SET UP POINTER ADDRESS
8190 064410  005021                        CLR     (R1)+                   ;COMMAND SPACE
8191 064412  005021                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
8192 064414  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
8193 064416  005011                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
8194 064420  000207                        RTS     PC                      ;RETURN
8195 064422                                ENDTST
     064422                                                        L10061:
     064422  104401                                                    TRAP    C$ETST
```

```
 9270
 9275
 9281
 9282
 9283
 9284                                    .SBTTL  HARDWARE PARAMETER CODING SECTION
 9285
 9286                                ;++
 9287                                ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
 9288                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
 9289                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
 9290                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
 9291                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
 9292                                ; WITH THE OPERATOR.
 9293                                ;--
 9294 071222                                BGNHRD
      071222  000015                        .WORD L10063-L$HARD/2
      071224                        L$HARD::
 9295
 9296 071224                                GPRMA   HPM1,0,0,160000,177776,YES      ;GET TSBA/TSDB REGISTER ADDRESS.
      071224  000031                        .WORD   T$CODE
      071226  071256                        .WORD   HPM1
      071230  160000                        .WORD   T$LOLIM
      071232  177776                        .WORD   T$HILIM
 9297 071234                                GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
      071234  001031                        .WORD   T$CODE
      071236  071305                        .WORD   HPM2
      071240  000000                        .WORD   T$LOLIM
      071242  000776                        .WORD   T$HILIM
 9298 071244                                GPRMD   HPM3,4,0,340,0,7,YES            ;GET INTERRUPT PRIORITY.
      071244  002032                        .WORD   T$CODE
      071246  071331                        .WORD   HPM3
      071250  000340                        .WORD   340
      071252  000000                        .WORD   T$LOLIM
      071254  000007                        .WORD   T$HILIM
 9299 071256                                ENDHRD
                                            .EVEN
      071256                        L10063:
 9300 071256      104     105     126  HPM1:  .ASCIZ  'DEVICE ADDRESS (TSSR) '
 9301 071305      111     116     124  HPM2:  .ASCIZ  'INTERRUPT VECTOR    '
 9302 071331      111     116     124  HPM3:  .ASCIZ  'INTERRUPT PRIORITY      '
 9303                                        .EVEN
 9304
```

```
                                        .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.
                                ;--
071362                                  BGNSFT
071362  000006                          .WORD L10064-L$SOFT/2
071364                          L$SOFT::
071364                                  GPRML   SPM1,0,-1,YES                   ;GET RAM DUMP FLAG
071364  000130                          .WORD   T$CODE
071366  071400                          .WORD   SPM1
071370  177777                          .WORD   -1
071372                                  GPRML   SPM4,2,-1,YES                   ; GET ITERATION CONTROL.
071372  001130                          .WORD   T$CODE
071374  071437                          .WORD   SPM4
071376  177777                          .WORD   -1
                                ;       GPRMD   SPM6,4,D,7777,0,7777,YES        ; GET LOCAL ERROR LIMIT
                                ;       GPRMD   SPM7,6,D,7777,0,7777,YES        ; GET GLOBAL ERROR LIMIT
071400                                  ENDSFT
                                        .EVEN
071400                          L10064:
071400  105  116  101            SPM1:   .ASCIZ  'ENABLE M7454 RAM DUMP ON ERROR'
071437  111  116  110            SPM4:   .ASCIZ  'INHIBIT ITERATIONS     '
071467  120  105  122            SPM6:   .ASCIZ  'PER TEST ERROR LIMIT   '
071517  120  105  122            SPM7:   .ASCIZ  'PER UNIT ERROR LIMIT   '
                                        .EVEN
                                        .SBTTL  PATCH AREA
                                ;+
                                ;DISPATCH TABLE
                                ;
                                ; *** MOVE TO FRONT OF PROGRAM FOR RELEASE ***
                                ;-
071550                                  DISPATCH        TESTNO
071550  000006                          .WORD   6
071552                          L$DISPATCH::
071552  023634                          .WORD   T1
071554  032316                          .WORD   T2
071556  041312                          .WORD   T3
071560  046630                          .WORD   T4
071562  052646                          .WORD   T5
071564  057776                          .WORD   T6

                                ; FINALLY A GENEROUS PATCH AREA.
                                ;
                                ; AND AN ADJUSTMENT TO ACCOUNT FOR THE "LASTAD BIT7" HACK
                                ; DESCRIBED IN "SUPPRG.MEM" (FOR REV C).
071566                          PATCH::
```

```
 9342 071566                            MOVER:
 9343 071566  012706  001000                    MOV     #1000,SP                ;SET STACK AT LOC 1000
 9344 071572  000005                            RESET                           ;GET THINGS IN PLACE
 9345 071574  012701  177777                    MOV     #-1,R1                  ;SET UP COUNTER
 9346 071600  005301                    5$:     DEC     R1                      ;BUMP COUNTER
 9347 071602  001376                            BNE     5$                      ;BR, IF MORE COUNTING TO DO
 9348 071604  012703  072002                    MOV     #MHDR+ROMBASE-MOVER,R3  ;POINT TO MESSAGE
 9349 071610  004737  071756                    JSR     PC,PRINT                ;"MOVER REV ??"
 9350 071614                            TEST5A:
 9351 071614  012701  172340                    MOV     #KIPAR0,R1              ;MOVER OF KIPAR REGISTERS
 9352 071620  012705  172300                    MOV     #KIPDR0,R5              ;MOVER OF THE KIPDR REGISTERS
 9353 071624  005000                            CLR     R0                      ;FIRST PAGE BASE ADDRESS
 9354 071626  010021                    20$:    MOV     R0,(R1)+                ;SET BASE FOR NEXT MAP
 9355 071630  012725  077406                    MOV     #77406,(R5)+            ;4K READ/WRITE EACH PAGE
 9356 071634  062700  000200                    ADD     #200,R0                 ;BASE FOR THE NEXT PAGE
 9357 071640  020027  001600                    CMP     R0,#1600                ;DONE ALL PAGES ?
 9358 071644  003770                            BLE     20$                     ;SET UP ALL MEMORY MANAGEMENT PAGES
 9359 071646  012741  007600                    MOV     #7600,-(R1)             ;SET UP I/O PAGE
 9360 071652  012737  002000  172354    16$:    MOV     #2000,@#KIPAR6          ;MOVER MEMORY PAGE 32KWORDS
 9361 071660  005005                            CLR     R5                      ;INITIAL LOCATION 0 MOVER
 9362 071662  012701  140000            17$:    MOV     #140000,R1              ;MOVER AT  LOC 0, RELATIVE TO KIPAR6
 9363 071666  012504                    10$:    MOV     (R5)+,R4                ;GET MEMORY CONTENTS
 9364 071670  052737  000001  177572            BIS     #1,@#SR0                ;ENABLE MEMORY MANAGEMENT
 9365 071676  010421                            MOV     R4,(R1)+                ;PUT INTO UPPER MEMORY
 9366 071700  042737  000001  177572            BIC     #1,@#SR0                ;TURN OFF MEMORY MANGEMENT
 9367 071706  020127  157776                    CMP     R1,#157776              ;END OF MEMORY PAGE YET ?
 9368 071712  101765                            BLOS    10$                     ;LUOP TILL WHOLE PAGE WRITTEN
 9369 071714  062737  000200  172354            ADD     #200,@#KIPAR6           ;MAP INTO NEXT PAGE
 9370 071722  023727  172354  003600            CMP     @#KIPAR6,#3600          ;UP TO 64K YET
 9371 071730  002754                            BLT     17$                     ;LOOP UNTIL ALL MEMORY WRITTEN
 9372 071732  042737  000001  177572            BIC     #1,@#SR0                ;TURN OFF MEMORY MANGEMENT
 9373 071740  012703  072071                    MOV     #GOOD+ROMBASE-MOVER,R3  ;POINT TO MESSAGE
 9374 071744  004737  071756                    JSR     PC,PRINT                ;"CODE HAS BEEN MOVED"
 9375 071750  000000                            HALT                            ;WAIT FOR DISK SWAP
 9376 071752  000137  072140                    JMP     RLBOOT                  ;GO BOOT THE XXDP PACK
 9377                                   ;
 9378                                   ;       PRINT ROUTINE
 9379                                   ;
 9380 071756                            PRINT:
 9381 071756  004737  071766    1$:     JSR     PC,TTYPRT               ;GO TO PRINT ROUTINE
 9382 071762  001375                            BNE     1$              ;LOOP UNTIL 000000 IS FOUND
 9383 071764  000207                            RTS     PC              ;RETURN TO CALLER
 9384                                   ;
 9385                                   ;       CHARACTER PRINT ROUTINE
 9386                                   ;
 9387 071766  105737  177564    TTYPRT: TSTB    @#TTOCSR                ;CHECK TTY FOR DONE
 9388 071772  100375                            BPL     TTYPRT          ;LOOP UNTIL DONE SETS
 9389 071774  112337  177566                    MOVB    (R3)+,@#TTOBFR  ;SEND OUT CORRECT CHARACTER
 9390 072000  000207                            RTS     PC              ;RETURN TO CALLER
 9391                                   ;
 9392                                   ;       MESSAGE AREA
 9393                                   ;
 9394 072002    015    012    115     MHDR:   .ASCII  <15><12>/MOVER REV 0.0/
 9395 072021    015    012    103             .ASCIZ  <15><12>/CODE FROM 0-32K MOVES TO 32-64K WORDS/
 9396 072071    015    012    103     GOOD:   .ASCIZ  <15><12>/CODE HAS BEEN MOVED/<15><12>
 9397 072121    015    012    102     BOOT:   .ASCIZ  <15><12>/BOOTING XXDP/
                                               .EVEN
 9398
```

PATCH AREA

```
 9400 072140                          RLBOOT:
 9401 072140  012701  174400                  MOV     #CSR,R1          ;DL'S CSR REGISTER ADDRESS
 9402 072144  012700  174404          1$:     MOV     #DAR,R0          ;ADDRESS OF RL'S REGISTERS
 9403 072150  012720  000013                  MOV     #DLSR,(R0)+      ;SET RESET AND GET STATUS
 9404 072154  004537  072302                  JSR     R5,3$            ;MOVER PULSE
 9405 072160  000004                          .WORD   DLGETS           ;GET STATUS COMMAND
 9406 072162  032711  000001                  BIT     #READY,@R1       ;CHECK FOR DRIVE READY
 9407 072166  001010                          BNE     2$               ;BR IF READY
 9408 072170  011004                          MOV     (R0),R4          ;GET STATUS INFO
 9409 072172  042704  177730                  BIC     #DLERR,R4        ;ERROR MASK
 9410 072176  001451                          BEQ     7$               ;BR IF NO PACK
 9411 072200  022704  000006                  CMP     #DLUN,R4         ;UNLOAD HEADS CHECK
 9412 072204  101446                          BLOS    7$               ;BR IF YES
 9413 072206  000756                          BR      1$               ;JUST WAIT AROUND FOR READY
 9414 072210  004537  072302          2$:     JSR     R5,3$            ;RETURN TO SAVE CODE
 9415 072214  000010                          .WORD   DLRDHD           ;GET CURRENT HEAD POSITION
 9416 072216  011004                          MOV     @R0,R4           ;GET ADDRESS
 9417 072220  042704  000177                  BIC     #DLCYL,R4        ;JUST CYLINDER ADDRESS
 9418 072224  005204                          INC     R4               ;SET UP FOR SEEK
 9419 072226  010440                          MOV     R4,-(R0)         ;CYLINDER OFFSET IN
 9420 072230  004537  072302                  JSR     R5,3$            ;DO THE SEEK
 9421 072234  000006                          .WORD   SEEK             ;SEEK COMMAND
 9422 072236  005037  174402                  CLR     @#BAR            ;ADDRESS 0
 9423 072242  005020                          CLR     (R0)+            ;CYLINDER 0 SECTOR 0
 9424 072244  012710  177400                  MOV     #-256.,@R0       ;256 WORD TRANSFER 2'S COMP
 9425 072250  004537  072302                  JSR     R5,3$            ;DO THE READ
 9426 072254  000014                          .WORD   READ             ;READ COMMAND
 9427 072256  005000                          CLR     R0               ;POINT TO DRIVE 0
 9428 072260  022737  000240  000000          CMP     #240,@#0         ;LOC 0 = TO NOP
 9429 072266  001016                          BNE     8$               ;NOT TRUE BOOT RECORD
 9430 072270  012703  072121                  MOV     #BOOT+ROMBASE-MOVER,R3   ;POINTER TO PRINT ROUTINE
 9431 072274  004737  071756                  JSR     PC,PRINT         ;"ABOUT TO BOOT XXDP"
 9432 072300  005007                          CLR     PC               ;LOOKS GOOD JUMP 0
 9433                                ;
 9434                                ;
 9435                                ;       END TEST NUMBER SIXTEEN
 9436                                ;
 9437                                ;
```

```
 9439 072302  012511                3$:     MOV     (R5)+,@R1                       ;ACTUAL MOVER WITH COMMAND
 9440 072304  032711  100200        4$:     BIT     #DLDNER,@R1                     ;CHECK FOR DONE OR ERROR BITS
 9441 072310  001775                        BEQ     4$                              ;WAIT FOR SAME
 9442 072312  100401                        BMI     5$                              ;BR ON ERROR
 9443 072314  000205                        RTS     R5                              ;OK KEEP GOING
 9444 072316  077266                5$:     SOB     R2,1$                           ;RETRY MINUS ONE
 9445 072320  000000                        HALT                            ;HALT ON ERROR
 9446 072322  000000                7$:     HALT                            ;HALT ON ERROR
 9447 072324  000000                8$:     HALT                            ;HALT ON ERROR
 9448
 9449                               ;       .IF     NZ,..&377
 9450                               ;       .=.!377+1
 9451                               ;       .ENDC
 9452 072326                               LASTAD          ;SET LAST USED ADDRESS.
                                           .EVEN
      072326  072344                       .WORD T$FREE
      072330  000005                       .WORD T$SIZE
      072332                       L$LAST::
 9453                                      .SBTTL  HARD CODED P-TABLE
 9454                               ;++
 9455                               ;       DIAGNOSTIC IS PRE-PARAMETERIZED PER THIS TABLE
 9456                               ;--
 9457 072332                               BGNSETUP        1
 9458 072332                               BGNPTAB
      072332  000000                       .WORD   0
      072334  000003                       .WORD   L10067-./2-1
      072336                       L10065:
 9459 072336  172522                       .WORD           172522
 9460 072340  000224                       .WORD           224
 9461 072342  000240                       .WORD           PRI05
 9462 072344                               ENDPTAB
      072344                       L10067:
 9463 072344                               ENDSETUP
 9464
 9465         000001                       .END
```

SYMBOL TABLE

```
ADDSSR  011762 G      CTABM   003116 G      DATASC  021124        FATERR= 000060        G$YES = 000010
ADR   = 000020 G      C$AU   = 000052       DEBUGM  011454        FATFLG  002170 G      HIADDR= 001400
AMBTSS  006326        C$AUTO= 000061        DEVCNT  002166 G      FERCM   011544        HIMEM = 007776
ASSEMB= 000010        C$BRK  = 000022       DEVDRO  023564        FIFEXP  012012 G      HOE   = 100000 G
A1716 = 000003        C$BSEG= 000004        DEVNRD  023503        FIF1MS  012064        HPM1    071256
BADDAT  003110 G      C$BSUB= 000002        DEVNXR  023421        FIF2MS  012133        HPM2    071305
BADSSR  016540 G      C$CEFG= 000045        DEVONL  023351        FILLME  020362        HPM3    071331
BAR   = 174402        C$CLCK= 000062        DEVSUM  023314        FNOINT  004113        IBE   = 010000 G
BENBSW  002174 G      C$CLEA= 000012        DFPTBL  002124 G      FORCER  002144 G      IDU   = 000040 G
BIE   = 040000        C$CLOS= 000035        DIAGMC= 000000        FREE    003072 G      IER   = 020000 G
BIT0  = 000001 G      C$CLP1= 000006        DLCYL  = 000177       FREEHI  003076        IFAULT  004154
BIT00 = 000001 G      C$CVEC= 000036        DLDNER= 100200        FRESIZ  003074 G      INCERK  017732
BIT01 = 000002 G      C$DCLN= 000044        DLERR  = 177730       FUSI    004015        INTCPC  017010
BIT02 = 000004 G      C$DODU= 000051        DLGETS= 000004        F$AU   = 000015       INTFLA  017005
BIT03 = 000010 G      C$DRPT= 000024        DLRDHD= 000010        F$AUTO= 000020        INTMAS  017004
BIT04 = 000020 G      C$DU   = 000053       DLRDNH= 000016        F$BGN  = 000040       INTR    017056 G
BIT05 = 000040 G      C$EDIT= 000003        DLSR   = 000013       F$CLEA= 000007        INTREC  002172 G
BIT06 = 000100 G      C$ERDF= 000055        DLUN   = 000006       F$DU   = 000016       INTVEC  017006
BIT07 = 000200 G      C$ERHR= 000056        DSBINT  017044        F$END  = 000041       INTX    004176
BIT08 = 000400 G      C$ERRO= 000060        DUAD12  004541        F$HARD= 000004        IOKCKI= 000200
BIT09 = 001000 G      C$ERSF= 000054        DUFLG   003060 G      F$HW   = 000013       IOKSTP= 000001
BIT1  = 000002 G      C$ERSO= 000057        DUMMY   003030        F$INIT= 000006        IPRI    002160 G
BIT10 = 002000 G      C$ESCA= 000010        EF.CON= 000036 G      F$JMP  = 000050       ISR   = 000100 G
BIT11 = 004000 G      C$ESEG= 000005        EF.NEW= 000035 G      F$MOD  = 000000       IVEC    002156 G
BIT12 = 010000 G      C$ESUB= 000003        EF.PWR= 000034 G      F$MSG  = 000011       IXE   = 004000 G
BIT13 = 020000 G      C$ETST= 000001        EF.RES= 000037 G      F$PROT= 000021        I$AU   = 000041
BIT14 = 040000 G      C$EXIT= 000032        EF.STA= 000040 G      F$PWR  = 000017       I$AUTO= 000041
BIT15 = 100000 G      C$GETB= 000026        EMAXDU  017665        F$RPT  = 000012       I$CLN  = 000041
BIT2  = 000004 G      C$GETW= 000027        EN     = 000000       F$SEG  = 000003       I$DU   = 000041
BIT3  = 000010 G      C$GMAN= 000043        ENAINT  017012        F$SOFT= 000005        I$HRD  = 000041
BIT4  = 000020 G      C$GPHR= 000042        ENVIRN  021522        F$SRV  = 000010       I$INIT= 000041
BIT5  = 000040 G      C$GPLO= 000030        EPRTSW  002146 G      F$SUB  = 000002       I$MOD  = 000040
BIT6  = 000100 G      C$GPRI= 000040        EPRT1   005672        F$SW   = 000014       I$MSG  = 000041
BIT7  = 000200 G      C$INIT= 000011        EPRT2   005733        F$TEST= 000001        I$PROT= 000040
BIT8  = 000400 G      C$INLP= 000020        EPRT3   006015        GDDAT   003112 G      I$PTAB= 000041
BIT9  = 001000 G      C$MANI= 000050        ERCM    011555        GERRMA  002142 G      I$PWR  = 000041
BOE   = 000400 G      C$MEM  = 000031       ERRHI   002202 G      GETPAT  021066 G      I$RPT  = 000041
BOOT    072121        C$MSG  = 000023       ERRK    017644        GETSEL  021150 G      I$SEG  = 000041
BRINIT  004355        C$OPEN= 000034        ERRLO   002204 G      GOOD    072071        I$SETU= 000041
BSEL0 = 000000        C$PNTB= 000014        ERRNO  = 001144       G$CNTO= 000200        I$SFT  = 000041
BSEL1 = 000001        C$PNTF= 000017        ERRVEC= 000004 G      G$DELM= 000372        I$SRV  = 000041
CHKAMB  016704        C$PNTS= 000016        ERTABE  003330        G$DISP= 000003        I$SUB  = 000041
CHKMAN  021372 G      C$PNTX= 000015        ERTABL  003130        G$EXCP= 000400        I$TST  = 000041
CHKTSS  017224        C$QIO  = 000377       ESUM    017646        G$HILI= 000002        J$JMP  = 000167
CKDROP  020142        C$RDBU= 000007        EVL    = 000004 G     G$LOLI= 000001        KIPAR0= 172340
CKEMAX  017770        C$REFG= 000047        EXBCNT= 000010        G$NO   = 000000       KIPAR1= 172342
CKMSG   011202 G      C$RESE= 000033        EXPBRE  016342 G      G$OFFS= 000400        KIPAR2= 172344
CKMSG2  011322 G      C$REVI= 000003        EXPD    002176 G      G$OFSI= 000376        KIPAR3= 172346
CKRAM   010524 G      C$RFLA= 000021        EXPGOT  004431        G$PRMA= 000001        KIPAR4= 172350
CKRAM2  011100 G      C$RPT  = 000025       EXPGT2  004465        G$PRMD= 000002        KIPAR5= 172352
CMPMEM  020546        C$SEFG= 000046        EXPMSG  002266 G      G$PRML= 000000        KIPAR6= 172354
CONFIG  020210        C$SPRI= 000041        EXPREC  016334 G      G$RADA= 000140        KIPAR7= 172356
COUNT   002254 G      C$SVEC= 000037        EXTA    005232        G$RADB= 000000        KIPDR0= 172300
CSR   = 174400        C$TPRI= 000013        EXTEND  005230        G$RADD= 000040        KIPDR1= 172302
CSRADD  002154 G      DAR    = 174404       ESEND  = 002100       G$RADL= 000120        KIPDR2= 172304
CTAB    003116 G      DATA    002256 G      ESLOAD= 000035        G$RADO= 000020        KIPDR3= 172306
CTABE   003130 G      DATAFL  015053        FATCHK  020070        G$XFER= 000004        KIPDR4= 172310
```

SYMBOL TABLE

```
KIPDR5= 172312          L$REV   002010 G        L10057  057774          O$BGNS= 000001          O.ODT   064424 G
KIPDR6= 172314          L$RPT   023052 G        L10060  055352          O$DU  = 000001          O.OFST  065744
KIPDR7= 172316          L$SOFT  071364 G        L10061  064422          O$ERRT= 000000          O.OLD   065342
KTENAB  003102 G        L$SPC   002056 G        L10062  061062          O$GNSW= 000001          O.OP1   065346
KTFLG   003100 G        L$SPCP  002020 G        L10063  071256          O$POIN= 000001          O.OP2   065412
KTINIT  021610          L$SPTP  002024 G        L10064  071400          O$SETU= 000001          O.OP2A  065420
KTOFF   020234          L$STA   002030 G        L10065  072336          O.ADR1  071134          O.ORAB  064652
KTON    020216          L$SW    002134 G        L10067  072344          O.ALL   067520          O.ORPC  064630
LERRMA  002140 G        L$TEST  002114 G        MEMADD  013576 G        O.AS    065214          O.ORRB  064662
LISTAL= 000001          L$TIML  002014 G        MENASC  021341          O.ASC   070503          O.P     070477
LOE   = 040000 G        L$UNIT  002012 G        MENERR  021266          O.ASCI  066530          O.PCS   064642
LOOPCN  002164 G        L10000  002132          MENRES  021370          O.BACK  065500          O.PRNT  066766
LOOPCO  012750          L10001  002144          MESBFA  002716 G        O.BALL  067404          O.PROC  066344
LOOPFL  003114 G        L10002  005226          MESBFN  014623          O.BD    070504          O.PROM  070512
LOT   = 000010 G        L10003  011666          MESHEA  015006          O.BKP = 000016          O.RALL  065670
L$ACP   002110 G        L10004  011716          MHDR    072002          O.BKPT  065526          O.RCSR= 177560
L$APT   002036 G        L10005  011734          MMVEC = 000250          O.BRK   067034          O.RDB = 177562
L$AU    022550 G        L10006  011742          MOVER   071566          O.BW    070464          O.REG   070416
L$AUT   002070 G        L10007  011760          MPR   = 174406          O.BYT   065252          O.REGT  064542
L$AUTO  022754 G        L10010  011776          MSA.FR= 000006          O.BYT1  065244          O.REM   067670
L$CCP   002106 G        L10011  012010          MSA.NO= 000000          O.CAD   070466          O.RSB   067624
L$CLEA  023030 G        L10012  012062          MSA.NR= 000004          O.CADV  070032          O.RSR   067574
L$CO    002032 G        L10013  012232          MSA.VO= 000002          O.CLGT= 000035          O.RSTT  067764
L$DEPO  002011 G        L10014  012746          MSGEXP  012000 G        O.CLSE  070330          O.S     070475
L$DESC  003342 G        L10015  013574          MSGLOO  012706 G        O.COMP  066670          O.SCAN  065006
L$DESP  002076 G        L10016  013616          MSGSTA  012172 G        O.CR    070507          O.SEMI  065206
L$DEVP  002060 G        L10017  016340          MSGSUB  013564 G        O.CRET  065334          O.SEQ   070502
L$DISP  071552 G        L10020  016346          MS.ATT= 000006          O.CRLF  070362          O.SNGL  064732
L$DLY   002116 G        L10021  016354          MS.EXT= 000200          O.CRLS  070376          O.SPAC  070316
L$DTP   002040 G        L10022  016366          MS.RSD= 000001          O.CSR1  070500          O.STM = 000340
L$DTYP  002034 G        L10023  016410          MS.RSF= 000020          O.CSR2  070501          O.SVR   067534
L$DU    022646 G        L10024  016436          MS.RST= 000010          O.CT    071156          O.SVTT  067736
L$DUT   002072 G        L10025  016576          NBA   = 002000          O.C1    066416          O.SWCH  071126
L$DVTY  003334 G        L10026  017106          NEWPAS  022202          O.DCD   064762          O.T     070476
L$EF    002052 G        L10030  022500          NODEV   003062 G        O.DCDA  065340          O.TBIT  066274
L$ENVI  002044 G        L10031  022644          NOINIT  004233          O.DCDB  065666          O.TBT = 000020
L$ETP   002102 G        L10032  022752          NOINTR  004117          O.DCD1  065002          O.TCLS  064704
L$EXP1  002046 G        L10033  023026          NOITS   002136 G        O.DCD2  064776          O.TCSR= 177564
L$EXP4  002064 G        L10034  023050          NOMAN   021426          O.DOT   070470          O.TDB = 177566
L$EXP5  002066 G        L10035  023312          NP.IR = 000200          O.DUMP  066450          O.TL    070554
L$HARD  071224 G        L10036  032314          NP.LOO= 000040          O.EFF   066054          O.TRTC  070564
L$HIME  002120 G        L10037  024300          NP.OUT= 000100          O.ERR   064752          O.TVEC= 000014
L$HPCP  002016 G        L10040  024754          NP.WRP= 000020          O.ERR1  066050          O.TYPE  070302
L$HPTP  002022 G        L10041  025456          NSI     004050          O.FCHR  071130          O.UIN   071200
L$HW    002124 G        L10042  026322          NSINIT  004305          O.FCNT  071132          O.UPC   071114
L$ICP   002104 G        L10043  041310          NUL     004425          O.FTYP  070146          O.UPS   071116
L$INIT  021752 G        L10044  033712          NULCR   004426          O.GET   070214          O.URO   071076
L$LADP  002026 G        L10045  035306          NXM   = 004000          O.GO    066244          O.USP   071112
L$LAST  072332 G        L10046  035660          NXR     003636          O.GO1   066322          O.WB1   065260
L$LOAD  002100 G        L10047  036322          NXRERR  005176 G        O.GO2   066326          O.WDFG  070474
L$LUN   002074 G        L10050  046626          NXRX    003675          O.HIGH  071124          O.WRD   065230
L$MREV  002050 G        L10051  042204          NXTU    022214          O.LG  = 000010          O.WRD1  065274
L$NAME  002000 G        L10052  042774          OFL   = 000100          O.LGCH  070517          O.WSCH  066060
L$PRIO  002042 G        L10053  052644          ONEFIL= 000000          O.LGDR  065114          O.XXX   070472
L$PROT  021742 G        L10054  047504          O$APTS= 000000          O.LOW   071122          PASRPT  022246
L$PRT   002112 G        L10055  050272          O$AU  = 000001          O.MOVE  066626          PATCH   071566 G
L$REPP  002062 G        L10056  051070          O$BGNR= 000001          O.MSK   071120          PAIDAT  021122
```

SYMBOL TABLE

```
PC.ERA= 002400          PW.RDE= 000024          RMPKTE= 000027          S2.BTI= 000004          TTOCSR= 177564
PC.IER= 002000          PW.RDR= 000001          RMR   = 010000          S2.DIM= 000200          TTYPRT  071766
PC.NOO= 001000          PW.RDS= 000005          ROMBAS= 071566          S2.ILW= 000100          TUV2A   002000 G
PC.REL= 000000          PW.RFI= 000003          RWPACK  010520          S2.INR= 000020          T$ARGC= 000003
PC.REW= 000400          PW.WCT= 000006          SC    = 100000          S2.OUT= 000040          T$CODE= 001130
PKBCNT= 000006          PW.WFI= 000004          SCE   = 020000          S2.UND= 000003          T$ERRN= 001144
PKHI  = 000004          PW.WFM= 000007          SCME    004711          TBLEND= 003030 G        T$EXCP= 000000
PKLOW = 000002          PW.WMI= 000010          SDELAY  010320          TCOASC  006167          T$FLAG= 000040
PKTADD  007266          PW.WNP= 000011          SEEK  = 000006          TCOCOD  006370          T$FREE= 072344
PKTFRM  007230          PW.WTR= 000002          SELASC  021334          TEMP1   003064 G        T$GMAN= 000000
PKTGET  011720 G        P.ACK = 100000          SELDAT= 000004          TEMP2   003066 G        T$HILI= 000007
PKTMES  011744 G        P.CMD = 000037          SEL2  = 000002          TERCLS= 000016          T$LAST= 000001
PKTNEW  007323           P.CONT= 000012          SETMAP  020256          TESTNO= 000006          T$LOLI= 000000
PKTRAM  004643 G        P.CVC = 040000          SETU    022300          TEST5A  071614          T$LSYM= 010000
PKTSSR  011670 G        P.FMT = 000140          SFFMSG  011736 G        TEXASC  006126          T$LTNO= 000006
PNT   = 001000 G        P.FORM= 000011          SFHERR  003603          TFCASC  006230          T$NEST= 000000
PRAMPK  013620           P.GETS= 000017          SFIERR  003550          TIMEXP  016412 G        T$NS0 = 000000
PRBEXP  016330           P.IE  = 000200          SFIMSG  011656 G        TIMSG0  016440          T$NS1 = 000005
PRBMSG  016176           P.INIT= 000013          SFPTBL  002134 G        TINERR  011643          T$NS2 = 000002
PRBREC  016332           P.MODE= 007400          SIFLAG  003106 G        TKB   = 177562          T$PCNT= 000000
PRBTOT  016263           P.OPP = 020000          SIMSG   011610          TKS   = 177560          T$PTAB= 010066
PRBYTE  015762 G        P.POSI= 000010          SKIPT   003332          TMPBFR  002576 G        T$PTHV= 000001
PRI   = 002000 G        P.READ= 000001          SOFINI  016634 G        TNAM    017572          T$PTNU= 000001
PRIADD  007702           P.SWB = 010000          SPACE   010130 G        TPB   = 177566          T$SAVL= 177777
PRIAO   007752           P.WRIT= 000005          SPM1    071400          TPS   = 177564          T$SEGL= 177777
PRIBXO  007334 G        P.WRTC= 000004          SPM4    071437          TRANST  002134 G        T$SIZE= 000005
PRIEQU  007602           P.WRTS= 000006          SPM6    071467          TSBA  = 177776 G        T$SUBN= 000001
PRINT   071756           QVP     002152 G        SPM7    071517          TSBAH = 177777 G        T$TAGL= 177777
PRIPKT  007062 G        RAMASC  013766          SR0   = 177572          TSBAL = 177776 G        T$TAGN= 010070
PRIRAM  007610           RAMDAT  002206 G        SR1   = 177574          TSDB  = 177776 G        T$TEMP= 000007
PRITAD  010016           RAMER   010626 G        SR2   = 177576          TSDBH = 177777 G        T$TEST= 000006
PRITSS  005264           RAMERR  016350 G        SR3   = 172516          TSDBL = 177776 G        T$TSTM= 177777
PRITO   010066           RAMEXP  016370 G        SSR   = 000200          TSFCOD  006730          T$TSTS= 000001
PRIXOR  007464 G        RAMFHR  014532          STATCO  012234          TSREJ = 000006          T$$AU = 010031
PRI00 = 000000 G        RAMFOR  007640          SVCGBL= 000000          TSSDEF  006277          T$$AUT= 010033
PRI01 = 000040 G        RAMHLD  011010          SVCINS= 000000          TSSR  = 000000 G        T$$CLE= 010034
PRI02 = 000100 G        RAMIOP  011014          SVCSUB= 000001          TSSRBI  003400 G        T$$DAT= 010067
PRI03 = 000140 G        RAMPD   011065          SVCTAG= 000000          TSSRFO  006106          T$$DU = 010032
PRI04 = 000200 G        RAMR5H  011012          SVCTST= 000001          TSSRH = 000001 G        T$$HAR= 010063
PRI05 = 000240 G        RAMSIZ  002246 G        S$LSYM= 010000          TSSX    003716          T$$HW = 010000
PRI06 = 000300 G        RAMTAD  016356 G        S0.IDB= 000010          TSTBLK  002720 G        T$$INI= 010030
PRI07 = 000340 G        RBPCRA  015120          S0.IFB= 000002          TSTCNT  002162 G        T$$MSG= 010025
PRMESS  014052           RCVHIA  002250 G        S0.IFP= 000001          TSTEND  017606          T$$PC = 000001
PRMNO   002264 G        RCVLOA  002252 G        S0.ILD= 000020          TSTFLA  002260 G        T$$PRO= 010027
PRMSGE  015412 G        RDERR   005104          S0.ION= 000040          TSTLOO  017344 G        T$$PTA= 010066
PRMSG0  015572           READ  = 000014          S0.IRD= 000100          TSTPTR  002262 G        T$$RPT= 010035
PRMSG1  015637           READY = 000001          S0.IRW= 000004          TSTSET  017376 G        T$$SOF= 010064
PRMSG2  015675           RECMSG  002432 G        S0.ISP= 000200          TST29I  032101          T$$SRV= 010026
PROASC  014703           RECV    002200 G        S1.ICE= 002000          TST30I  041111          T$$SUB= 010062
PR1ASC  014750           REGSAV  021026          S1.IEO= 010000          TST31I  046403          T$$SW = 010001
PST32W  003104 G        REWIND  010424 G        S1.IFM= 001000          TST32I  052440          T$$TES= 010061
PUNIT   022502           RLBOOT  072140          S1.IHE= 000400          TST34I  057112          T1      023634 G
PW.D11= 000021           RMCHBE= 000167          S1.IID= 004000          TST37I  064223          T1.1    023674
PW.D13= 000022           RMCHEN= 000200          S1.I1R= 020000          TTIBFR= 177562 G        T1.2    024302
PW.D22= 000020           RMMSGB= 000104          S1.I2R= 040000          TTICSR= 177560 G        T1.3    024756
PW.NOP= 000000           RMMSGE= 000117          S1.PAR= 100000          TTIVEC= 000060 G        T1.4    025460
PW.NO1= 000023           RMPKTB= 000020          S2.ATI= 000010          TTOBFR= 177566          T2      032316 G
```

SYMBOL TABLE

T2.1	032352	T29WDR	026520		T30WDF	037433	T32AM3	051547	T34RT3	057750
T2.2	033714	T29WNG	026563		T31AM3	044656	T32BA	051663	T34RWN	057134
T2.3	035310	T29WRT	027704		T31BA	045216	T32BFR	051140	T34STE	057307
T2.4	035662	T29WSS	031036		T31BFR	043040	T32BOE	052166	T34STM	057213
T29AM3	030402	T3	041312	G	T31BF2	043160	T32BOT	051316	T34SZ	055536
T29BA	030744	T3.1	041352		T31BOT	044205	T32CMD	051260	T34S2	055550
T29BFR	026370	T3.2	042206		T31BS0	043160	T32CNT	051310	T34S3	055552
T29BF2	026510	T30BFR	036370		T31BS1	043161	T32CNU	051312	T34TMK	056637
T29BOT	027751	T30BF2	036510		T31CNT	043176	T32DAT	051130	T34TMN	057403
T29BS0	026510	T30BOT	037721		T31CNU	043200	T32DLY	051314	T34WB	055532
T29BS1	026511	T30BS0	036510		T31CON	043172	T32ECF	052255	T34WD	055554
T29CNT	026534	T30BS1	036511		T31DAT	043030	T32EOT	051411	T34WDR	055556
T29CON	026522	T30CNT	036530		T31DLY	043202	T32ERA	051616	T34WOL	057540
T29DAT	026360	T30CNU	036532		T31DTA	046306	T32LOO	046670	T34WTM	056227
T29DLY	026540	T30DAT	036360		T31EOT	044400	T32OPI	052403	T37AM3	062567
T29DTA	030016	T30DLY	036536		T31LON	045360	T32PAC	051120	T37BA	063127
T29EOT	030104	T30DTA	041014		T31LOO	041352	T32PK2	051230	T37BFR	061130
T29LON	031125	T30DTR	040750		T31LOP	045442	T32PK3	051250	T37BF2	061250
T29LOO	023674	T30ETM	036366		T31LOQ	043756	T32RB	051252	T37BOT	062141
T29LOP	031207	T30FCN	036534		T31LOR	043631	T32RES	052500	T37BS0	061250
T29LOQ	027466	T30IBT	036711		T31NEF	045700	T32RIB	051736	T37BS1	061251
T29LOR	027341	T30IBU	036540		T31OFL	044725	T32RT2	052572	T37CNT	061266
T29NEF	026670	T30IMV	036516		T31PAC	043020	T32RT3	052622	T37CNU	061270
T29NEQ	031445	T30LOO	032352		T31PBP	045524	T32RWN	051500	T37CON	061262
T29OFL	026542	T30LOQ	037510		T31PK2	043130	T32SCF	052034	T37DAT	061120
T29PAC	026350	T30NEF	040456		T31PK3	043150	T32SZ	051256	T37DLY	061272
T29PBP	031271	T30OFL	040167		T31RB	043152	T32TSA	052111	T37DTA	064126
T29PK2	026460	T30PAC	036350		T31RDE	043204	T32WB	051252	T37EOT	062311
T29PK3	026500	T30PK2	036460		T31RDF	043403	T32WDC	052336	T37LON	063271
T29RB	026502	T30PK3	036500		T31RES	046450	T34BFR	055420	T37LOO	060042
T29RDF	026760	T30PTB	037122		T31RN	043166	T34BF2	055546	T37LOP	063353
T29RDG	031543	T30RB	036502		T31RNC	044603	T34BOT	056120	T37LOQ	061735
T29RES	032130	T30RDF	037273		T31RRF	043452	T34BS0	055546	T37LOR	061610
T29RIB	031706	T30RDG	037351		T31RT2	046542	T34BS1	055547	T37NEF	063611
T29RN	026516	T30RES	041132		T31RT3	046604	T34CNT	055542	T37OFL	062636
T29RNC	030327	T30RIB	036625		T31RWN	044534	T34CON	055560	T37PAC	061110
T29RRF	027027	T30RN	036516		T31SC	043547	T34DAT	055410	T37PBP	063435
T29RRG	027143	T30RRM	040535		T31SCF	046021	T34DLY	055544	T37PK2	061220
T29RRN	032006	T30RRN	040613		T31SSR	044037	T34EOT	057034	T37PK3	061240
T29RSZ	026536	T30RRP	040672		T31SZ	043156	T34ET	056745	T37RB	061242
T29RT2	032222	T30RT2	041224		T31S2	043162	T34ETC	056043	T37RDF	061362
T29RT3	032264	T30RT3	041266		T31S3	043164	T34ETN	056404	T37RES	064244
T29RWN	030260	T30RWN	040120		T31TIM	044300	T34ETO	055652	T37RN	061256
T29SC	027257	T30SKM	036774		T31TM	044457	T34ETS	056467	T37RNC	062514
T29SDG	031624	T30SSR	037571		T31TRL	045612	T34ETZ	056555	T37RRF	061431
T29SSR	027547	T30SZ	036506		T31TSA	046076	T34ET2	056316	T37RT2	064336
T29SZ	026506	T30S2	036512		T31VCK	045143	T34LOO	052706	T37RT3	064400
T29S2	026512	T30S3	036514		T31WB	043152	T34PAC	055400	T37RWN	062445
T29S3	026514	T30TM	037766		T31WDC	045070	T34PK2	055510	T37SC	061526
T29TM	030202	T30TMK	040374		T31WDD	045000	T34PK3	055530	T37SCF	063707
T29TRL	031357	T30TM2	040043		T31WDE	044073	T34POS	055564	T37SSR	062016
T29VCK	030671	T30TPB	037213		T31WDF	043701	T34RB	055532	T37SZ	061246
T29WB	026502	T30VCK	040321		T31WDR	043170	T34RES	057614	T37S2	061252
T29WDC	030577	T30WB	036502		T31WNG	043331	T34RRE	055742	T37S3	061254
T29WDD	030470	T30WDC	040242		T31WNH	043250	T34RRF	057466	T37TIM	062234
T29WDE	027622	T30WDD	037050		T31WRF	046203	T34RSZ	055540	T37TM	062370
T29WDF	027411	T30WDE	037642		T31WSS	045271	T34RT2	057706	T37TRL	063523

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CZTUZAO TU80 FRONT END PRT D    MACRO M1200  29-MAR-83 13:43  PAGE 140-5
SYMBOL TABLE

T37TSA  063764          UNREC = 000006          WRTMSG  004754          XSORLL= 010000          X2.EXT= 000200
T37VCK  063054          USI     004021          XFERAS  016600          XSORLS= 040000          X2.OPM= 100000
T37WB   061242          WAITF   017110 G        XNXM    017264          XSOTMK= 100000          X2.RCE= 040000
T37WDC  063001          WC.IFA= 000200          XORBFO  007416          XSOVCK= 000020          X2.REV= 000077
T37WDD  062711          WC.IFE= 000002          XORFOR  007534          XSOWLE= 004000          X2.SPA= 035400
T37WDE  062052          WC.IGO= 000001          XST0  = 000006 G        XSOWLK= 000004          X2.UNI= 000007
T37WDF  061660          WC.IRE= 000010          XST1  = 000010 G        XS1CON  015232          X2.WCF= 002000
T37WDR  061260          WC.IRW= 000004          XST2  = 000012 G        XS2CON  015277          X3.DCK= 000010
T37WNG  061274          WC.IOT= 000100          XST3  = 000014 G        XS3CON  015344          X3.MBZ= 000006
T37WRF  064046          WC.I1T= 000040          XST4  = 000016 G        XXCOMM  003070 G        X3.MDE= 177400
T37WSS  063202          WC.I5R= 000020          XSOBOT= 000002          X$ALWA= 000000          X3.OPI= 000100
T4      046630 G        WF.IED= 000010          XSOCON  015165          X$FALS= 000040          X3.REV= 000040
T4.1    046670          WF.IER= 000004          XSOEOT= 000001          X$OFFS= 000400          X3.RIB= 000001
T4.2    047506          WF.IHI= 000200          XSOIE = 000040          X$TRUE= 000020          X3.SPA= 000200
T4.3    050274          WF.IRE= 000040          XSOILA= 000400          X1.COR= 020000          X3.TRF= 000020
T5      052646 G        WF.IWF= 000020          XSOILC= 001000          X1.DLT= 100000          X4.HSP= 100000
T5.1    052706          WF.IWR= 000100          XSOLET= 020000          X1.MBZ= 017375          X4.MBZ= 017400
T6      057776 G        WF.I3R= 000002          XSOMOT= 000200          X1.RBP= 000400          X4.RCE= 040000
T6.1    060042          WF.I4R= 000001          XSONEF= 002000          X1.SPA= 040000          X4.TSM= 020000
UAM   = 000200 G        WRTCHR  010322 G        XSOONL= 000100          X1.UNC= 000002          X4.WRC= 000377
UNITN   002150 G        WRTERR  005011          XSOPED= 000010          X2.BUF= 000100

. ABS.  072344     000
        000000     001
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  36224 WORDS  ( 142 PAGES)
DYNAMIC MEMORY:  20060 WORDS  ( 77 PAGES)
ELAPSED TIME:  00:12:21
CZTUZA.BIC,CZTUZA/-SP=SVC.MLB/ML,CZTUZA
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