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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.

TABLE OF CONTENTS

TABLE OF CONTENTS

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 (HSAADO)
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
```

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 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.

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 (CORRESPONDS 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 ERROKS 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
000000                                  .ENABL  AMA,ABS
        002000                          . = 2000
002000                                  BGNMOD  TUV2A
002000                          TUV2A::

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


002000                                  POINTER BGNSW,BGNSFT,BGNAU,BGNDU,BGNRPT,BGNSETUP
002000                                  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$HPCP::                ;POINTER TO H.W. QUFS.
002016  071224                          .WORD   L$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                  L$ENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
002044  000000                  .WORD   0
002046                  L$EXP1::                ;EXPANSION WORD
002046  000000                  .WORD   0
002050                  L$MREV::                ;SVC REV AND EDIT #
002050     003                  .BYTE   C$REVISION
002051     003                  .BYTE   C$EDIT
002052                  L$EF::                  ;DIAG. EVENT FLAGS
002052  000000                  .WORD   0
002054  000000                  .WORD   0
002056                  L$SPC::
002056  000000                  .WORD   0
002060                  L$DEVP::                ; POINTER TO DEVICE TYPE LIST
002060  003334                  .WORD   L$DVTYP
002062                  L$REPP::                ;PTR. TO REPORT CODE
002062  023052                  .WORD   L$RPT
002064                  L$EXP4::
002064  000000                  .WORD   0
002066                  L$EXP5::
002066  000000                  .WORD   0
002070                  L$AUT::                 ;PTR. TO ADD UNIT CODE
002070  022550                  .WORD   L$AU
002072                  L$DUT::                 ;PTR. TO DROP UNIT CODE
002072  022646                  .WORD   L$DU
002074                  L$LUN::                 ;LUN FOR EXERCISERS TO FILL
002074  000000                  .WORD   0
002076                  L$DESP::                ;POINTER TO DIAG. DESCRIPTION
002076  003342                  .WORD   L$DESC
002100                  L$LOAD::                ;GENERATE SPECIAL AUTOLOAD EMT
002100  104035                  EMT     E$LOAD
002102                  L$ETP::                 ;POINTER TO ERRTBL
002102  000000                  .WORD   0
002104                  L$ICP::                 ;PTR. TO INIT CODE
002104  021752                  .WORD   L$INIT
002106                  L$CCP::                 ;PTR. TO CLEAN-UP CODE
002106  023030                  .WORD   L$CLEAN
002110                  L$ACP::                 ;PTR. TO AUTO CODE
002110  022754                  .WORD   L$AUTO
002112                  L$PRT::                 ;PTR. TO PROTECT TABLE
002112  021742                  .WORD   L$PROT
002114                  L$TEST::                ;TEST NUMBER
002114  000000                  .WORD   0
002116                  L$DLY::                 ;DELAY COUNT
002116  000000                  .WORD   0
002120                  L$HIME::                ;PTR. TO HIGH MEM
002120  000000                  .WORD   0
```

```
                                        .SBTTL  DEFAULT HARDWARE P-TABLE

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

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

```
                                        .SBTTL  SOFTWARE P-TABLE

                                ;++
                                ; THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
                                ; PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
                                ;--
002132                                  BGNSW   SFPTBL
002132  000004                         .WORD   L10001-L$SW/2
002134                          L$SW::
002134                          SFPTBL::

002134  000000                  TRANSTST::      .WORD   0       ;ENABLE RAM DUMP IF =1
002136  000000                  NOITS::         .WORD   0       ; INHIBIT ITERATION OPTION.
                                                                ; ... 0 = ITERATE.
                                                                ; ...NZ = INHIBIT ITERATE.
002140  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.
                                ;--

800 002144                              EQUALS          ; GET STANDARD EQUATES.
                                ;
                                ; BIT DIFINITIONS
                                ;
            100000              BIT15== 100000
            040000              BIT14== 40000
            020000              BIT13== 20000
            010000              BIT12== 10000
            004000              BIT11== 4000
            002000              BIT10== 2000
            001000              BIT09== 1000
            000400              BIT08== 400
            000200              BIT07== 200
            000100              BIT06== 100
            000040              BIT05== 40
            000020              BIT04== 20
            000010              BIT03== 10
            000004              BIT02== 4
            000002              BIT01== 2
            000001              BIT00== 1
                                ;
            001000              BIT9==  BIT09
            000400              BIT8==  BIT08
            000200              BIT7==  BIT07
            000100              BIT6==  BIT06
            000040              BIT5==  BIT05
            000020              BIT4==  BIT04
            000010              BIT3==  BIT03
            000004              BIT2==  BIT02
            000002              BIT1==  BIT01
            000001              BIT0==  BIT00
                                ;
                                ; EVENT FLAG DEFINITIONS
                                ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
                                ;
            000040              EF.START==      32.                     ; START COMMAND WAS ISSUED
            000037              EF.RESTART==    31.                     ; RESTART COMMAND WAS ISSUED
            000036              EF.CONTINUE==   30.                     ; CONTINUE COMMAND WAS ISSUED
            000035              EF.NEW==        29.                     ; A NEW PASS HAS BEEN STARTED
            000034              EF.PWR==        28.                     ; A POWER-FAIL/POWER-UP OCCURRED
                                ;
                                ;
                                ; PRIORITY LEVEL DEFINITIONS
                                ;
```

```
                000340                  PRI07== 340
                000300                  PRI06== 300
                000240                  PRI05== 240
                000200                  PRI04== 200
                000140                  PRI03== 140
                000100                  PRI02== 100
                000040                  PRI01== 40
                000000                  PRI00== 0
                                        ;
                                        ;OPERATOR FLAG BITS
                                        ;
                000004                  EVL==     4
                000010                  LOT==    10
                000020                  ADR==    20
                000040                  IDU==    40
                000100                  ISR==   100
                000200                  UAM==   200
                000400                  BOE==   400
                001000                  PNT==  1000
                002000                  PRI==  2000
                004000                  IXE==  4000
                010000                  IBE== 10000
                020000                  IER== 20000
                040000                  LOE== 40000
                100000                  HOE== 100000
    801
    802 002144                          KT11    ,,      ;DEFINE MEMORY MANAGEMENT REGISTERS
                                        .SBTTL  MEMORY MANAGEMENT DEFINITIONS
                                        ;*KT11 VECTOR ADDRESS
                000250                  MMVEC=  250
                                        ;*KT11 STATUS REGISTER ADDRESSES
                177572                  SR0=    177572
                177574                  SR1=    177574
                177576                  SR2=    177576
                172516                  SR3=    172516
                                        .IF NB
                                        ;*USER "I" PAGE DESCRIPTOR REGISTERS
                                        UIPDR0= 177600
                                        UIPDR1= 177602
                                        UIPDR2= 177604
                                        UIPDR3= 177606
                                        UIPDR4= 177610
                                        UIPDR5= 177612
                                        UIPDR6= 177614
                                        UIPDR7= 177616
                                        .IF NB
                                        ;*USER "D" PAGE DESCRIPTOR REGISTORS
                                        UDPDR0= 177620
                                        UDPDR1= 177622
                                        UDPDR2= 177624
                                        UDPDR3= 177626
                                        UDPDR4= 177630
                                        UDPDR5= 177632
                                        UDPDR6= 177634
                                        UDPDR7= 177636
                                        .ENDC
                                        ;*USER "I" PAGE ADDRESS REGISTERS
```

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

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

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


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

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

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

```
000117               RMMSGEND= 117                          ;MESSAGE BUFFER END RAM ADDRESS
                     ;+
                     ;
                     ;REGISTER DEFINITIONS IN THE MESSAGE BUFFER
                     ;
                     ;-
000006               XST0==  6                              ;EXTENDED STATUS REGISTER 0 (WORD 4)
000010               XST1==  8.                             ;EXTENDED STATUS REGISTER 1 (WORD 5)
000012               XST2==  10.                            ;EXTENDED STATUS REGISTER 2 (WORD 6)
000014               XST3==  12.                            ;EXTENDED STATUS REGISTER 3 (WORD 7)
000016               XST4==  14.                            ;EXTENDED STATUS REGISTER 4 (WORD 8)
                     ;+
                     ;
                     ;OFFSETS TO WORD LOCATIONS IN PACKET DEFINITIONS
                     ;
                     ;-
000002                       PKLOW   = 2                    ;LOW ORDER CHARACTERISTIC DATA POINTER
000004                       PKHI    = 4                    ;HIGH ORDER CHARACTERISTIC DATA POINTER
000006                       PKBCNT  = 6                    ;NUMBER OF BYTES IN DATA PACKET
000010                       EXBCNT=10                      ;NUMBER OF BYTES IN EXTENDED DATA PACKET
                     ;+
                     ;DATA PACKET OFFSETS FOR WRITE SUBSYTEM COMMAND
                     ;-
000000                       BSEL0   = 0                    ;BYTE 0
000001                       BSEL1   = 1                    ;BYTE 1
000002                       SEL2    = 2                    ;WORD 2
000004                       SELDATA = 4                    ;WORD 3
                     ;+
                     ;BSEL0 SELECT CODES FOR WRITE SUBSYSTEM COMMAND
                     ;-
000000               PW.NOP          = 0                    ;NO-OP
000001               PW.RDRAM        = 1                    ;READ RAM
000002               PW.WTRAM        = 2                    ;WRITE RAM
000003               PW.RFIFO        = 3                    ;READ FIFO
000004               PW.WFIFO        = 4                    ;WRITE FIFO
000005               PW.RDSTAT       = 5                    ;READ STATUS
000006               PW.WCTL         = 6                    ;WRITE TAPE CONTROL
000007               PW.WFMT         = 7                    ;WRITE TAPE FORMAT
000010               PW.WMISC        = 10                   ;WRITE MISCELLANEOUS
000011               PW.WNPR         = 11                   ;WRITE NPR CONTROL
000020               PW.D22          = 20                   ;DO MICROTEST 22
000021               PW.D11          = 21                   ;DO MICROTEST 11
000022               PW.D13          = 22                   ;DO MICROTEST 13
000023               PW.NO1311       = 23                   ;DISABLE MICROTEST 11 AND 13
000024               PW.RDEXT        = 24                   ;READ EXT. TAPE STATUS (NOT SUPPORTED BY ALL TRANSPO
                     ;+
                     ;BSEL1 CODES FOR WRITE TAPE CONTROL
                     ;-
000200               WC.IFAD         = BIT7                 ;IFAD - FORMATTER ADDRESS
```

```
1035    000100          WC.IOTAD        = BIT6                  ;ITAD0  - TRANSPORT ADDRESS BIT 0
1036    000040          WC.I1TAD        = BIT5                  ;ITAD1  - TRANSPORT ADDRESS BIT 1
1037    000020          WC.I5RESV       = BIT4                  ;IRESV5 - RESERVED #5
1038    000010          WC.IREW         = BIT3                  ;IREW   - REWIND
1039    000004          WC.IRWU         = BIT2                  ;IRWU   - REWIND AND UNLOAD
1040    000002          WC.IFEN         = BIT1                  ;IFEN   - FORMATTER ENABLE
1041    000001          WC.IGO          = BIT0                  ;GO
1042
1043                    ;+
1044                    ;BSEL1 CODES FOR WRITE FORMAT
1045                    ;-
1046    000200          WF.IHISP        = BIT7                  ;IHISP  - HIGH SPEED
1047    000100          WF.IWRT         = BIT6                  ;IWRT   - WRITE
1048    000040          WF.IREV         = BIT5                  ;IREV   - REVERSE
1049    000020          WF.IWFM         = BIT4                  ;IWFM   - WRITE FILE MARK
1050    000010          WF.IEDIT        = BIT3                  ;IEDIT  - EDIT
1051    000004          WF.IERASE       = BIT2                  ;IERASE - ERASE
1052    000002          WF.I3RESV       = BIT1                  ;IRESV3 - RESERVED #3
1053    000001          WF.I4RESV       = BIT0                  ;IRESV4 - RESERVED #4
1054
1055
1056                    ;+
1057                    ;BSEL1 CODES FOR WRITE MISCELLANEOUS SUBCOMMAND
1058                    ;-
1059    000200          MS.EXT          = BIT7                  ;INVERT SENSE OF EXTENDED FEATURES SWITCH
1060    000020          MS.RSFIFO       = BIT4                  ;RESET FIFO AND INPUT PARITY ERRORR
1061    000010          MS.RSTAPE       = BIT3                  ;RESET TAPE STATUS IN 2 FLIP-FLOPS
1062    000006          MS.ATTN         = BIT2!BIT1             ;ATTENTION TRIGGER FIELD
1063    000001          MS.RSD          = BIT0                  ;RESET TIMER A,B THEN DELAY TIMES IN SEL2
1064                    ;+
1065                    ; MS.ATTN SUBCODES
1066                    ;-
1067    000000                  MSA.NOP = 0*2                   ;NO-OP (NOTHING TRIGGERED)
1068    000002                  MSA.VOL = 1*2                   ;SIMULATE ON-LINE/OFF-LINE TRANSISTION
1069    000004                  MSA.NRAM= 2*2                   ;FORCE NON-FATAL RAM ERROR (FORCES ERRCODE 54)
1070    000006                  MSA.FRAM= 3*2                   ;FORCE FATAL RAM ERROR (CAUSES SCE TO SET)
1071                    ;+
1072                    ; WRITE SUBSYSTEM WRITE NPR BSEL1 BIT DEFINITIONS
1073                    ;-
1074    000200          NP.IR           = BIT7                  ;INTERRUPT REQUEST (0-1 TRANSITION)
1075    000100          NP.OUT          = BIT6                  ;TAPE DATA DIRECTION OUT (0= IN)
1076    000040          NP.LOOP         = BIT5                  ;ENABLE TRANSPORT LOOPBACK
1077    000020          NP.WRP          = BIT4                  ;WRITE CORRECT PARITY (SET=0 TO WRITE WRONG)
1078                    ;+
1079                    ; READ STATUS MESSAGE BUFFER BIT DEFINITIONS
1080                    ;-
1081
1082    000200          S2.DIM          = BIT7                  ;WORD #9 BYTE 2 DATA IN MISS
1083    000100          S2.ILW          = BIT6                  ;               ILW H
1084    000040          S2.OUTRDY       = BIT5                  ;               OUT RDY H
1085    000020          S2.INRDY        = BIT4                  ;               IN RDY H
1086    000010          S2.ATIMR        = BIT3                  ;               TIMER A FLAG H
1087    000004          S2.BTIMR        = BIT2                  ;               TIMER B FLAG H
1088    000003          S2.UNDEF        = BIT1+BIT0             ;(UNDEFINED)
1089    100000          S1.PARIN        = BIT15                 ;WORD #8 BYTE 1 PARIN H
1090    040000          S1.I2RESV       = BIT14                 ;               IRESV2
1091    020000          S1.I1RESV       = BIT13                 ;               IRESV1
```

```
010000          S1.IEOT         = BIT12         ;                       IEOT L
004000          S1.IIDENT       = BIT11         ;                       IIDENT H
002000          S1.ICER         = BIT10         ;                       ICER H
001000          S1.IFMK         = BIT9          ;                       IFMK H
000400          S1.IHER         = BIT8          ;                       IHER H
000200          S0.ISPEED       = BIT7          ;WORD #8 BYTE 0         ISPEED H
000100          S0.IRDY         = BIT6          ;                       IRDY L
000040          S0.IONL         = BIT5          ;                       IONL L
000020          S0.ILDP         = BIT4          ;                       ILDP L
000010          S0.IDBY         = BIT3          ;                       IDBY L
000004          S0.IRWD         = BIT2          ;                       IRWD L
000002          S0.IFBY         = BIT1          ;                       IFBY L
000001          S0.IFPT         = BIT0          ;                       IFPT L
                ;       SPECIAL KEYBORD STUFF FOR MOVER PROGRAM

177560                  TKS     =177560                 ;KEYBOARD STATUS REGISTER
177562                  TKB     =177562                 ;KEYBOARD DATA REGISTER
177564                  TPS     =177564                 ;CONSOLE PRINTER STATUS REGISTER
177566                  TPB     =177566                 ;CONSOLE PRINTER DATA REGISTER
007776                  HIMEM   =007776                 ;HIGH MEMORY MASK VALUE
                ;       CONTROLLER DEFINITIONS
174400                  CSR     =174400                 ;STATUS AND CONTROL REGISTER
174402                  BAR     =174402                 ;DL ADDRESS REGISTER
174404                  DAR     =174404                 ;PLATTER ADDRESS
174406                  MPR     =174406                 ;MULTIPURPOSE REGISTER
                ;
                ;       CONTROLLER COMMANDS
                ;
000004                  DLGETS  =4                      ;GET STATUS COMMAND
000006                  SEEK    =6                      ;SEEK TRACK AND HEAD SELECT
000010                  DLRDHD  =10                     ;READ SECTOR HEADER
000014                  READ    =14                     ;READ COMMAND
000016                  DLRDNH  =16                     ;READ SECTOR NO HEADER CHECK
                ;
000001                  READY   =1                      ;DRIVE READY BIT IN STATUS REG.
000013                  DLSR    =13                     ;STATUS AND RESET
177730                  DLERR   =177730                 ;MASK FOR COVER OPEN
000006                  DLUN    =6                      ;HEADS UNLOADED
000177                  DLCYL   =000177                 ;MASK FOR CYLINDER ADDRESS
100200                  DLDNER  =100200                 ;DONE SET OR ERROR SET BITS
                ;
071566                  ROMBASE =       MOVER           ;START OF THE BOOT ROM @@@@@
177560                  TTICSR  =       177560          ;KEYBOARD INPUT STATUS
177562                  TTIBFR  =       177562          ;KEYBOARD DATA REGISTER
177564                  TTOCSR  =       177564          ;CONSOLE PRINTER STATUS REGISTER
177566                  TTOBFR  =       177566          ;CONSOLE PRINTER DATA REGISTER
```

```
                                .SBTTL  SPECIAL MACROS AND OPDEFS.


;+
;SAVE GENERAL REGS 1 TO 5
;-

        .MACRO  SAVREG
        JSR     R5,REGSAV
        .ENDM

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

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

;+
```

```
CZTUZAO TU80 FRONT END PRT D    MACRO M1200  29-MAR-83 13:43  PAGE 19-1
SPECIAL MACROS AND OPDEFS.

                                ;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               ;LOW 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  00000C  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
                                ;-

003334                                  DEVTYP  <TU80>
003334                          L$DVTYP::
003334  124  125  070                    .ASCIZ  /TU80/
                                        .EVEN

                                ;+
                                ;TEST DESCRIPTION
                                ;-
003342                                  DESCRIPT <CZTUZA0 TU80 FRONT END PRT D>
003342                          L$DESC::
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.
                                ;--

005176                                  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
                                ;
                                ;-

005264                          PRITSSR:
005264                                  SAVREG                          ;SAVE GENERAL REGISTERS
005270  010104                          MOV     R1,R4                   ;SAVE THE TSSR CONTENTS
005272                                  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: %03%A RECV: %03%A XOR: %03'
                                        .EVEN
```

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

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

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$PRNTB
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 = %O6'
                                        .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
```

```
 1723                                   ;
 1724                                   ;-
 1725 007702                            PRIADD:
 1726 007702                                    SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
 1727 007706  013700  002202                    MOV     ERRHI,R0        ;GET HIGH ADDRESSS
 1728 007712  013701  002204                    MOV     ERRLO,R1        ;GET LOW ADDRESS
 1729 007716  010102                            MOV     R1,R2           ;COPY LOW ADDRESS
 1730 007720  006101                            ROL     R1              ;SHIFT BIT 15 TO C BIT
 1731 007722  006100                            ROL     R0              ;SHIFT INTO HIGH ORDER
 1732 007724                                    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
 1733 007750  000207                            RTS     PC              ;RETURN
 1734
 1735 007752     045     116     045  PRIA0:    .ASCIZ  '%N%A MEMORY ERROR ADDRESS = %01%05'
 1736                                           .EVEN
 1737
 1738
 1739                                           .SBTTL  PRITADD - PRINT MEMORY TEST ADDRESS
 1740                                   ;+
 1741                                   ;
 1742                                   ;PRINT MEMORY ADDRESS
 1743                                   ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
 1744                                   ;
 1745                                   ; IMPLICIT INPUTS
 1746                                   ;
 1747                                   ;       ERRHI   - HIGH ORDER ADDRESS
 1748                                   ;       ERRLO   - LOW ORDER ADDRESS
 1749                                   ;
 1750                                   ;-
 1751 010016                            PRITADD:
 1752 010016                                    SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
 1753 010022  013700  002202                    MOV     ERRHI,R0        ;GET HIGH ADDRESSS
 1754 010026  013701  002204                    MOV     ERRLO,R1        ;GET LOW ADDRESS
 1755 010032  010102                            MOV     R1,R2           ;COPY LOW ADDRESS
 1756 010034  006101                            ROL     R1              ;SHIFT BIT 15 TO C BIT
 1757 010036  006100                            ROL     R0              ;SHIFT INTO HIGH ORDER
 1758 010040                                    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
 1759 010064  000207                            RTS     PC              ;RETURN
 1760 010066     045     116     045  PRIT0:    .ASCIZ  '%N%A MEMORY TEST ADDRESS = %01%05'
 1761                                           .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:
                                ;
                                ;
                                ;-
                                ;
010130                          SPACE::
010130                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
010134  012737  000764  010320          MOV     #500.,SDELAY    ;SET UP DELAY
010142  012737  140010  010310          MOV     #140010,80$     ;SET UP COMMAND, SPACE FORWARD
010150  005703                          TST     R3              ;CHECK FOR DIRECTION
010152  100403                          BMI     5$              ;BR, IF REVERSE INDICATED
010154  010337  010312                  MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010160  000407                          BR      10$             ;GO DO COMMAND
010162  042703  100000          5$:     BIC     #BIT15,R3       ;CLEAR DIRECTION BIT
010166  010337  010312                  MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010172  052737  000400  010310          BIS     #BIT8,80$       ;SET REVERSE BIT IN COMMAND PACKET
010200  012704  010310          10$:    MOV     #80$,R4         ;SET UP R4 WITH PACKET ADDRESS
010204  010465  177776                  MOV     R4,TSDB(R5)     ;SEND OUT COMMAND
010210  004737  017110          15$:    JSR     PC,WAITF        ;WAIT FOR SSR
010214  103420                          BCS     20$             ;BR, IF SSR IS SET AND OK
010216                                  DELAY   250             ;DELAY ABOUT .25 SECONDS
010216  012727  000250                  MOV     #250,(PC)+
010222  000000                          .WORD   0
010224  013727  002116                  MOV     L$DLY,(PC)+
010230  000000                          .WORD   0
010232  005367  177772                  DEC     -6(PC)
010236  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
```

```
1829                                    ;
1830                                    ;
1831                                    ;
1832                                    ;PACKET FOR SPACE COMMAND
1833                                    ;
1835 010306                                     .BLKB   10-<.-TUV2A87>
1837                                    ;
1838                                    ;COMMAND WORD
1839 010310  000000                     80$:    .WORD
1840                                    ;NUMBER OF RECORDS TO BE SPACED OVER WORD
1841 010312  000000                     90$:    .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$:    CLC                     ;CARPY CLEAR = ERROR
010416  016500  000000          70$:    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>
010520                          RWPACK:
010520  102010                          .WORD   102010                  ;POSTION COMMAND (REWIND)
010522  000000                          .WORD   0                       ;NOT USED
```

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

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

010524                          CKRAM::
010524                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
010530  012701  002206                  MOV     #RAMDATA,R1     ;ADDRESS TO SAVE THE RAM DATA
010534  012702  000020                  MOV     #RMPKTBEG,R2    ;BYTE ADDRESS OF FIRST RAM DATA
010540  005003                          CLR     R3              ;CLEAR THE ERROR FLAG
010542  004737  017224                  JSR     PC,CHKTSSR      ;WAIT FOR SSR
010546  004737  017224          10$:    JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
010552  110265  177777                  MOVB    R2,TSDBH(R5)    ;SELECT NEXT RAM ADDRESS
010556  004737  017224                  JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
010562  116511  177776                  MOVB    TSBAL(R5),(R1)  ;READ THE RAM DATA
010566  122124                          CMPB    (R1)+,(R4)+     ;COMPARE TO EXPECTED
010570  001401                          BEQ     20$             ;BRANCH IF OK
010572  005203                          INC     R3              ;SET ERROR FLAG
010574  005202                  20$:    INC     R2              ;ADDRESS OF NEXT RAM LOCATION
010576  020227  000027                  CMP     R2,#RMPKTEND    ;REACHED END YET ?
010602  003761                          BLE     10$             ;BRANCH TILL ALL READ
010604  005703                          TST     R3              ;WAS AN ERROR FOUND ?
010606  001402                          BEQ     30$             ;BRANCH IF NOT
010610  000241                          CLC                     ;CLEAR CARRY TO SHOW ERROR
010612  000401                          BR      50$             ;AND EXIT
010614  000261                  30$:    SEC                     ;SHOW GOOD COMPARE
010616  012737  000010  002246  50$:    MOV     #8.,RAMSIZ      ;SETUP RAMSIZ FOR PRAMPKT ROUTINE
010624  000207                          RTS     PC              ;RETURN
```

```
 2007                                           .SBTTL RAMER - READ AND DISPLAY SELECTED RAM
 2008                                   ;+
 2009                                   ;
 2010                                   ;ROUTINE TO READ THE SELECTED RAM LOCATIONS
 2011                                   ;
 2012                                   ;INPUT:
 2013                                   ;
 2014                                   ;       R5      FIRST DEVICE UNIBUS ADDRESS
 2015                                   ;       CONSOLE WILL ALSO BE PRINTED TO
 2016                                   ;
 2017                                   ;IMPLICIT OUTPUT:
 2018                                   ;
 2019                                   ;       THE TABLE RAMDATA IS FILLED WITH THE
 2020                                   ;       DATA HELD IN RAM.
 2021                                   ;
 2022                                   ;SIDE EFFECTS:
 2023                                   ;
 2024                                   ;
 2025                                   ;-
 2026
 2027 010626                            RAMER::
 2028 010626                                    SAVREG                  ;SAVE THE GENERAL REGISTERS
 2029 010632  013705  011012                    MOV     RAMR5H,R5       ;RESET R5 TO FIRST DEVICE REGISTER
 2030 010636  012701  002206                    MOV     #RAMDATA,R1     ;ADDRESS TO SAVE THE RAM DATA
 2031 010642  013702  011010                    MOV     RAMHLD,R2       ;BYTE ADDRESS OF THE FIRST RAM DATA
 2032 010646  013703  002246                    MOV     RAMSIZ,R3       ;SET THE SIZE OF THE READ UP
 2033 010652  004737  017224            10$:    JSR     PC,CHKTSSR      ;WAIT FOR THE SSR TO SET
 2034 010656  110265  177777                    MOVB    R2,TSDBH(R5)    ;SELECT NEXT RAM ADDRESS
 2035 010662  004737  017224                    JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
 2036 010666  116521  177776                    MOVB    TSBAL(R5),(R1)+ ;READ THE RAM DATA
 2037 010672  062702  000001            20$:    ADD     #1,R2           ;ADDRESS OF THE NEXT RAM LOCATION
 2038 010676  077313                            SOB     R3,10$          ;NUMBER OF LOCATIONS COUNTER
 2039 010700  013704  002246                    MOV     RAMSIZ,R4       ;GET THE RAM SIZE
 2040 010704  013702  011010                    MOV     RAMHLD,R2       ;GET THE STARTING RAM ADDRESS
 2041 010710  060204                            ADD     R2,R4           ;CALCULATE THE END ADDRESS
 2042 010712  162704  000001                    SUB     #1,R4           ;CORRECT VALUE OF PRINTOUT
 2043 010716                                    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$PNTX
      010736  062706  000010                    ADD     #10,SP
 2044 010742  012701  002206                    MOV     #RAMDATA,R1     ;ADDRESS OF WHERE RAM DATA IS
 2045 010746  013703  002246                    MOV     RAMSIZ,R3       ;THE SIZE OF THE RAM FIELD READ
 2046 010752  005004            30$:    CLR     R4                      ;NO EXTRA DATA LEFT OVER
 2047 010754  112104                            MOVB    (R1)+,R4        ;PICK UP BYTE OF RAM DATA
 2048 010756  042704  177400                    BIC     #177400,R4      ;GET RID OF SIGN EXTEND
 2049 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$PNTX
      011000  062706  000006                    ADD     #6,SP
 2050 011004  077316                            SOB     R3,30$          ;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,SETMAP               ;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
                                ;
                                ;-
011322                          CKMSG2::
011322                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011326  020327  000144                  CMP     R3,#RECMSG-EXPMSG;@@D IS COUNT ABOVE MAX ALLOWED?
011332  003412                          BLE     5$              ;@@D BR IF NO
011334  012703  000144                  MOV     #RECMSG-EXPMSG,R3;@@D
011340                                  PRINTF  #DEBUGMSG       ;@@D
011340  012746  011454                  MOV     #DEBUGMSG,-(SP)
011344  012746  000001                  MOV     #1,-(SP)
011350  010600                          MOV     SP,R0
011352  104417                          TRAP    C$PNTF
011354  062706  000004                  ADD     #4,SP
011360  010037  002250          5$:     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
```

```
CZTUZA0 TU80 FRONT END PRT D    MACRO M1200  29-MAR-83 13:43  PAGE 39-1
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-';200
   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 TIMERR: .ASCIZ  /TEST: .../
   2230                                 .EVEN
```

```
 2232
 2233
 2234                                   ;+
 2235                                   ;
 2236                                   ;PRINT ROUTINE TO FATAL SOFT INIT ERRORS
 2237                                   ;
 2238                                   ;INPUT:
 2239                                   ;
 2240                                   ;       R1      CONTENTS OF TSSR AT ERROR
 2241                                   ;
 2242                                   ;SIDE EFFECTS:
 2243                                   ;
 2244                                   ;       EXECUTES DROP UNIT TO CEASE TESTING
 2245                                   ;
 2246                                   ;-
 2247
 2248 011656                                   BGNMSG  SFIMSG
      011656                           SFIMSG::
 2249 011656  004737  005264                   JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
 2250 011662  004737  020142                   JSR     PC,CKDROP       ;DROP UNIT, IF ALLOWED
 2251 011666                                   ENDMSG
      011666                           L10003:
      011666  104423                          TRAP    C$MSG
 2252
 2253                                   ;+
 2254                                   ;PRINT ROUTINE TO PRINT THE CONTENTS OF
 2255                                   ;TSSR AND A COMMAND PACKET OTHER THAN GET STATUS COMMAND PACKET.
 2256                                   ;
 2257                                   ;INPUTS:
 2258                                   ;
 2259                                   ;       R1      TSSR CONTENTS
 2260                                   ;       R4      ADDRESS OF COMMAND PACKET
 2261                                   ;
 2262                                   ;-
 2263
 2264 011670                                   BGNMSG  PKTSSR
      011670                           PKTSSR::
 2265 011670  004737  005264                   JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
 2266 011674  012700  000004                   MOV     #4,R0           ;NO. OF WORDS IN PACKET
 2267 011700  004737  007062                   JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
 2268 011704  013700  002716                   MOV     MESBFA,R0       ;ADDRESS OF MESSAGE BUFFER
 2269 011710  005001                           CLR     R1              ;ASSUME NO HIGH MEMORY
 2270 011712  004737  014052                   JSR     PC,PRMESS       ;PRINT THE MESSAGE BUFFER ALSO
 2271 011716                                   ENDMSG
      011716                           L10004:
      011716  104423                          TRAP    C$MSG
 2272
 2273                                   ;+
 2274                                   ;PRINT ROUTINE TO PRINT THE CONTENTS OF
 2275                                   ;TSSR AND A GET STATUS COMMAND PACKET.
 2276                                   ;
 2277                                   ;INPUTS:
 2278                                   ;
 2279                                   ;       R1      TSSR CONTENTS
 2280                                   ;       R4      ADDRESS OF COMMAND PACKET
 2281                                   ;
 2282                                   ;-
```

```
 2283
 2284 011720                                    BGNMSG  PKTGETS
      011720                              PKTGETS::
 2285 011720  004737  005264                    JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
 2286 011724  012700  000002                    MOV     #2,R0           ;NO. OF WORDS IN GET STATUS PACKET
 2287 011730  004737  007062                    JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
 2288 011734                                    ENDMSG
      011734                              L10005:
      011734  104423                           TRAP    C$MSG
 2289
 2290
 2291                                         ;+
 2292                                         ;PRINT TSSR ERRORS FOR INITIALIZATION TESTS
 2293                                         ;
 2294                                         ;INPUTS:
 2295                                         ;
 2296                                         ;       R1      TSSR CONTENTS
 2297                                         ;       R4      ADDRESS OF COMMAND PACKET
 2298                                         ;-
 2299
 2300 011736                                    BGNMSG  SFFMSG
      011736                              SFFMSG::
 2301 011736  004737  005264                    JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
 2302 011742                                    ENDMSG
      011742                              L10006:
      011742  104423                           TRAP    C$MSG
 2303
 2304
 2305                                         .SBTTL  PKTMES  - PRINT TSSR AND MESSAGE BUFFER
 2306                                         ;+
 2307                                         ;
 2308                                         ;PRINT ROUTINE TO PRINT THE CONTENTS OF TSSR AND MESSAGE
 2309                                         ;BUFFER FOR ERROR REPORTS
 2310                                         ;
 2311                                         ;INPUTS:
 2312                                         ;
 2313                                         ;       R1      CONTENTS OF TSSR
 2314                                         ;       R2      LOW ORDER MESSAGE BUFFER
 2315                                         ;       R3      HIGH ORDER MESSAGE BUFFER ADDRESS
 2316                                         ;       NOTE: R3 IS IGNORED IF KTENABLE FLAG IS CLEAR
 2317                                         ;-
 2318 011744                                    BGNMSG  PKTMES
      011744                              PKTMES::
 2319 011744  004737  005264                    JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR
 2320 011750  010200                            MOV     R2,R0           ;LOW ORDER ADDRESS
 2321 011752  010301                            MOV     R3,R1           ;HIGH ORDER ADDRESS
 2322 011754  004737  014052                    JSR     PC,PRMESS       ;PRINT THE MESSAGE BUFFER
 2323 011760                                    ENDMSG
      011760                              L10007:
      011760  104423                           TRAP    C$MSG
 2324
```

```
                                        .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  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  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)
                                ;-
012012                                  BGNMSG  FIFEXP
012012                          FIFEXP::
012012                                  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    C$PNTX
012030  062706  000006                  ADD     #6,SP
012034                                  PRINTX  #FIF2MSG        ;PRINT HEADER MSG
012034  012746  012133                  MOV     #FIF2MSG,-(SP)
012040  012746  000001                  MOV     #1,-(SP)
012044  010600                          MOV     SP,R0
012046  104415                          TRAP    C$PNTX
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    C$MSG
012064     045     116     045  FIF1MSG:        .ASCIZ  '%N%A NUMBER OF BYTES TRANSFERRED = %D2'
012133     045     116     045  FIF2MSG:        .ASCIZ  '%N%A FIFO DATA BYTES IN ERROR:'
                                        .EVEN
```

```
                                        .SBTTL  MSGSTAT - PRINT STATUS HEADER AND MESSAGE BUFFERS
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
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
```

```
CZTUZA0 TU80 FRONT END PRT D    MACRO M1200  29-MAR-83 13:43  PAGE 43-1
MSGLOOP - PRINT LOOPBACK HEADER AND MESSAGE BUFFERS

   2435 012712  012100                  10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
   2436 012714  001410                          BEQ     20$             ;BR IF YES
   2437 012716                                  PRINTX  R0              ;PRINT STATUS BIT NAMES
        012716  010046                          MOV     R0,-(SP)
        012720  012746  000001                  MOV     #1,-(SP)
        012724  010600                          MOV     SP,R0
        012726  104415                          TRAP    C$PNTX
        012730  062706  000004                  ADD     #4,SP
   2438 012734  000766                          BR      10$             ;DO ANOTHER MSG LINE
   2439 012736  012700  000012          20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
   2440 012742  004737  015412                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
   2441 012746                                  ENDMSG
        012746                          L10014:
        012746  104423                          TRAP    C$MSG
   2442
   2443 012750  012770  013043  013142  LOOPCOD:        .WORD   1$,2$,3$,4$,5$,6$,7$,0
   2444 012770     045     116     045  1$:.ASCIZ  '%N%A Tape Bus Loopback Signals in Word #8:'
   2445 013043     045     116     045  2$:.ASCIZ  '%N%A       PARERR<15>          IRESV2<14>          IRESV1<13>'
   2446 013142     045     116     045  3$:.ASCIZ  '%N%A IHISP=>IEOT<12>    IWRT=>IIDENT<11>    IREV  =>ICER  <10>'
   2447 013241     045     116     045  4$:.ASCIZ  '%N%A IWFM =>IFMX<09>    IEDIT=>IHER <08>    IFAD  =>ISPEED<07>'
   2448 013340     045     116     045  5$:.ASCIZ  '%N%A ITAD0=>IRDY<06>    ITAD1=>IONL <05>    IERASE=>ILDP  <04>'
   2449 013437     045     116     045  6$:.ASCIZ  '%N%A IREW =>IDBY<03>    IRWU =>IRWD <02>    IFEN  =>IFBY  <01>'
   2450 013536     045     116     045  7$:.ASCIZ  '%N%A IGO  =>IFPT<00>'
   2451                                         .EVEN
   2452
```

```
2454                                            .SBTTL  MSGSUB - PRINT WRITE SUBSYSTEM MESSAGE BUFFER
2455                                    ;+
2456                                    ;
2457                                    ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
2458                                    ;
2459                                    ;
2460                                    ;IMPLICIT INPUTS:
2461                                    ;
2462                                    ;       EXPMSG  - EXPECTED MESSAGE BUFFER
2463                                    ;       RECMSG  - RECEIVED MESSAGE BUFFER
2464                                    ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
2465                                    ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
2466                                    ;-
2467 013564                                    BGNMSG  MSGSUB
     013564                             MSGSUB::
2468 013564  012700  000012                    MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
2469 013570  004737  015412                    JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
2470 013574                                    ENDMSG
     013574                             L10015:
     013574  104423                            TRAP    C$MSG
2471
2472
2473
2474
2475
2476                                            .SBTTL  MEMADD - PRINT MEMORY ADDRESS DATA ERROR
2477                                    ;+
2478                                    ;
2479                                    ;PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
2480                                    ;
2481                                    ;IMPLICIT INPUTS:
2482                                    ;
2483                                    ;       ERRHI   - MEMORY ERROR HIGH ORDER ADDRESS
2484                                    ;       ERRLO   - MEMORY ERROR LOW ORDER ADDRESS
2485                                    ;       EXP     - EXPECTED DATA
2486                                    ;       RECV    - RECEIVED DATA
2487                                    ;-
2488 013576                                    BGNMSG  MEMADD
     013576                             MEMADD::
2489 013576  004737  007702                    JSR     PC,PRIADD       ;PRINT MEMORY ADDRESS IN ERROR
2490 013602  013701  002176                    MOV     EXPD,R1         ;GET EXPD DATA
2491 013606  013702  002200                    MOV     RECV,R2         ;GET RECEIVED DATA
2492 013612  004737  007464                    JSR     PC,PRIXOR       ;PRINT EXPD/RECV
2493 013616                                    ENDMSG
     013616                             L10016:
     013616  104423                            TRAP    C$MSG
2494
```

```
2496                                            .SBTTL  PRAMPKT - PRINT RAM AND PACKET DATA
2497                                    ;+
2498                                    ;
2499                                    ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
2500                                    ;WHEN THE RAM DATA DOES NOT MATCH.
2501                                    ;
2502                                    ;INPUTS:
2503                                    ;
2504                                    ;       R4      POINTER TO COMMAND PACKET
2505                                    ;
2506                                    ;IMPLICIT INPUTS:
2507                                    ;
2508                                    ;       RAMDATA         DATA AS READ FROM THE RAM
2509                                    ;       RAMSIZ          NUMBER OF BYTES IN PACKET
2510                                    ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
2511                                    ;
2512                                    ;IMPLICIT OUTPUTS:
2513                                    ;
2514                                    ;       RAMSIZ  SET TO 0
2515                                    ;-
2516
2517 013620                             PRAMPKT:
2518 013620                                     SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
2519 013624  012701  002206                     MOV     #RAMDATA,R1             ;DATA FROM THE RAM
2520 013630  005002                             CLR     R2                      ;INIT BYTE NUMBER
2521 013632  122124                     5$:     CMPB    (R1)+,(R4)+             ;COMPARE EXPECTED, RECEIVED
2522 013634  001000                             BNE     7$                      ;BR IF NO MATCH
2523 013636  116105  177777             7$:     MOVB    -1(R1),R5               ;GET RECV RAM DATA
2524 013642  116403  177777                     MOVB    -1(R4),R3               ;GET EXPD PACKET DATA
2525 013646                                     XOR     R5,R3                   ;XOR EXPD/RECV
2526 013652  042703  177400                     BIC     #177400,R3              ;LOW BYTE ONLY
2527 013662  116137  177777  002200             MOVB    -1(R1),RECV             ;GET RECEIVED RAM DATA
2528 013670  116437  177777  002176             MOVB    -1(R4),EXPD             ;GET EXPECTED RAM DATA
2529 013676                                     PRINTB  #RAMASC,R2,RECV,EXPD,R3
     013676  010346                             MOV     R3,-(SP)
     013700  013746  002176                     MOV     EXPD,-(SP)
     013704  013746  002200                     MOV     RECV,-(SP)
     013710  010246                             MOV     R2,-(SP)
     013712  012746  013766                     MOV     #RAMASC,-(SP)
     013716  012746  000005                     MOV     #5,-(SP)
     013722  010600                             MOV     SP,R0
     013724  104414                             TRAP    C$PNTB
     013726  062706  000014                     ADD     #14,SP
2530 013732  005202                     10$:    INC     R2                      ;UPDATE BYTE COUNT
2531 013734  005737  002246                     TST     RAMSIZ                  ;DEFAULT TO 8.?
2532 013740  001404                             BEQ     15$                     ;BR IF YES
2533 013742  020237  002246                     CMP     R2,RAMSIZ               ;DONE ALL BYTES?
2534 013746  003731                             BLE     5$                      ;BR IF NO
2535 013750  000403                             BR      25$                     ;
2536 013752  020227  000010             15$:    CMP     R2,#8.                  ;DONE DEFAULT NUMBER OF BYTES?
2537 013756  002725                     20$:    BLT     5$                      ;BR IF NO
2538 013760  005037  002246             25$:    CLR     RAMSIZ                  ;SET DEFAULT RAMSIZ
2539 013764  000207                             RTS     PC                      ;RETURN
2540 013766     045     116     045     RAMASC: .ASCIZ  '%N%A  BYTE: %D2%A RAM: %O3%A Packet: %O3%A XOR:%O3'
2541                                             .EVEN
```

```
                                        .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
                                ;
                                ;-
                                PRMESS:
                                        SAVREG                  ;SAVE THE REGISTERS
                                        MOV     R5,RAMR5H       ;SAVE DEVICE REGISTER POINTER
                                        MOV     R0,R5           ;SAVE LOW ORDER ADDRESS
                                        TST     KTENABLE        ;ADDRESS ABOVE 28K?
                                        BNE     10$             ;BR IF YES
                                        CLR     R1              ;SET HIGH ORDER ADDRESS TO 0
                                10$:    MOV     R1,R3           ;SAVE HIGH ORDER ADDRESS
                                        ROL     R0              ;SHIFT BIT15 TO C BIT
                                        ROL     R1              ;SHIFT TO HIGH ORDER FOR PRINTOUT
                                        PRINTX  #PROASC,R1,R5   ;PRINT MESSAGE BUFFER ADDRESS
                                        MOV     R5,-(SP)
                                        MOV     R1,-(SP)
                                        MOV     #PROASC,-(SP)
                                        MOV     #3,-(SP)
                                        MOV     SP,R0
                                        TRAP    C$PNTX
                                        ADD     #10,SP
                                        CMP     #177777,(R5)    ;MESSAGE BUFFER FULL OF ONES
                                        BNE     15$             ;BR IF BUFFER IS PROBABLY OKAY
                                        PRINTX  #MESBFN         ;"MESSAGE BUFFER PROBABLY NOT VALID"
                                        MOV     #MESBFN,-(SP)
                                        MOV     #1,-(SP)
                                        MOV     SP,R0
                                        TRAP    C$PNTX
                                        ADD     #4,SP
                                15$:    PRINTX  #PR1ASC         ;PRINT HEADER FOR CONTENTS
                                        MOV     #PR1ASC,-(SP)
                                        MOV     #1,-(SP)
                                        MOV     SP,R0
                                        TRAP    C$PNTX
                                        ADD     #4,SP
                                        CLR     R4              ;NUMBER OF THE NEXT WORD
                                        MOV     R5,R1           ;COPY LOW ORDER ADDRESS
                                        MOV     R3,R0           ;COPY HIGH ORDER ADDRESS
                                        BEQ     20$             ;BR IF NOT ABOVE 28K
                                        JSR     PC,SETMAP       ;SETUP PAR ADDRESS IN R0
                                        MOV     R0,R5           ;GET PAR FORMAT ADDRESS ABOVE 28K
                                20$:
                                        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$PNTX
                014274  062706  000006                  ADD     #6,SP
     2585       014300                                  PRINTX  #XS0CON,(R5)+   ;PRINT "XSTAT0 CONTENTS       ="
                014300  012546                          MOV     (R5)+,-(SP)
                014302  012746  015165                  MOV     #XS0CON,-(SP)
                014306  012746  000002                  MOV     #2,-(SP)
                014312  010600                          MOV     SP,R0
                014314  104415                          TRAP    C$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
```

```
                                        .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
                                ;-
                                
016356                                  BGNMSG  RAMTADD
016356                          RAMTADD::
016356  004737  010016                  JSR     PC,PRITADD      ;PRINT TEST ADDRESS
016362  004737  013620                  JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
016366                                  ENDMSG
016366                          L10022:
016366  104423                          TRAP    CSMSG

                                
                                        .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
                                ;-
                                
016370                                  BGNMSG  RAMEXP
016370                          RAMEXP::
016370  042701  177400                  BIC     #^C<377>,R1     ;SAVE EXPD RAM DATA BYTE
016374  042702  177400                  BIC     #^C<377>,R2     ;SAVE EXPD RAM DATA BYTE
016400  004737  007610                  JSR     PC,PRIRAM       ;PRINT THE RAM ADDRESS
016404  004737  007464                  JSR     PC,PRIXOR       ;PRINT THE DATA
016410                                  ENDMSG
016410                          L10023:
016410  104423                          TRAP    CSMSG

                                
                                        .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  #TIMSGO         ;PRINT HEADER
     016412  012746  016440                     MOV     #TIMSGO,-(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  TIMSGO: .ASCIZ  '%N%A TIMER A STATUS IS IN BIT 3%N%A TIMER B STATUS IS IN BIT 2'
2834                                    .EVEN
```

```
 2836                                           .SBTTL  BADSSR - PRINT TSSR ERRORS ON DATA TRANSFERS
 2837
 2838                                   ;+
 2839                                   ;
 2840                                   ;PRINT ROUTINE FOR TSSR ERRORS ON DATA TRANSFERS
 2841                                   ;
 2842                                   ;INPUTS:
 2843                                   ;
 2844                                   ;       R1      CONTENTS OF TSSR
 2845                                   ;       R2      DATA WRITTEN (8 BITS)
 2846                                   ;
 2847                                   ;-
 2848
 2849 016540                                    BGNMSG  BADSSR
      016540                            BADSSR::
 2850 016540  010246                            MOV     R2,-(SP)        ;SAVE DATA TRANSFERRED
 2851 016542  042702  177400                    BIC     #177400,R2      ;GET JUST ONE BYTE
 2852 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$PNTB
      016564  062706  000006                    ADD     #6,SP
 2853 016570  012602                            MOV     (SP)+,R2        ;RESTORE R2
 2854 016572  004737  005264                    JSR     PC,PRITSSR      ;DECODE TSSR CONTENTS
 2855 016576                                    ENDMSG
      016576                            L10025:
      016576  104423                            TRAP    C$MSG
 2856 016600     045     116     045  XFERASC:        .ASCIZ  '%N%A Data Transferred = %03'
 2857
```

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

                                ; BIT DEFINITIONS FOR "INTMASK" AND "INTFLAG" BYTES:
                                ;
          000200                        IOKCKIN=BIT7            ; DON'T CHECK FOR BAD INTERRUPTS -- TEST WILL.
          000001                        IOKSTP=BIT0             ; EXPECT "STOP" INTERRUPT.
                                ;
                                ;INTERRUPT MASK -- SAYS EXPECTING INTERRUPTS
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     #PRI07,(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     #PRI07,2(SP)
017054  000002                          RTI
```

```
2986                                            .SBTTL  INTR    - INTERRUPT HANDLERS
2987
2988 017056                                     BGNSRV  INTR            ;DEFINE INTERRUPT ENTRY
     017056                             INTR::
2989 017056  012737  000001  002172             MOV     #1,INTRECV      ;SET FLAG TO SHOW INTERRUPT RECEIVED
2990 017064  105037  017005                     CLRB    INTFLAG         ;CLEAR FLAG TO SAY WE GOT INTERRUPT
2991 017070  132737  000001  017004             BITB    #IOKSTP,INTMASK ;EXPECTING STOP INTERRUPT?
2992 017076  001003                             BNE     1$              ;BR IF YES
2993 017100  152737  000001  017005             BISB    #IOKSTP,INTFLAG ;NO. SET THE ERROR FLAG.
2994
2995                                     ;SAVE REGISTERS, MSG BUFFER, ETC.
2996 017106                             1$:
2997 017106                                     ENDSRV
     017106                             L10026:
     017106  000002                             RTI
2998
2999
```

```
                                        .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
```

```
3064                                            .SBTTL  XNXM    - CHECK FOR NONEXISTENT MEMORY
3065                                    ;+
3066                                    ; ROUTINE TO TEST FOR A NEXM IN THE RANGE (R1) THRU (R2).
3067                                    ; ON RETURN, IF "C" = 1, (R1) = NEXM ADDRESS.
3068                                    ;               "C" = 0, ALL ADDRESSES OK.
3069                                    ;
3070                                    ;CALL:  MOV ADR1,R1
3071                                    ;       MOV ADR2,R2
3072                                    ;       JSR PC,NXM
3073                                    ;       RETURN                  ;TEST "C" AND PROCEED.
3074                                    ;
3075 017264  012737  017316  000004    XNXM:   MOV     #2$,@#4         ; SET BUSERR VECTOR.
3076 017272  012737  000200  000006            MOV     #PR104,@#6
3077 017300  005003                            CLR     R3              ;FLAG.
3078 017302  005711                    1$:     TST     (R1)            ;TEST THE ADDRESS(ES).
3079                                                                    ;IF ANY TRAP, CONTINUE AT 2$.
3080 017304  020102                            CMP     R1,R2           ;OTHERWISE, CONTINUE HERE.
3081 017306  001407                            BEQ     3$              ;BR IF FINISHED (NO NEXM'S).
3082 017310  062701  000002                    ADD     #2,R1           ;SET NEXT ADDRESS...
3083 017314  000772                            BR      1$              ;...AND CONTINUE.
3084
3085 017316  005103                    2$:     COM     R3              ;GOT ONE, SET FLAG...
3086 017320  012716  017326                    MOV     #3$,(SP)
3087 017324  000002                            RTI                     ;...AND DISMISS INTERRUPT...
3088 017326                            3$:     CLRVEC  #4              ;...AND GIVE BACK THE VECTOR.
     017326  012700  000004                    MOV     #4,R0
     017332  104436                            TRAP    C$CVEC
3089 017334  005703                            TST     R3              ;DID WE CATCH ONE ??
3090 017336  001401                            BEQ     .+4             ;NO, "C" = 0, SKIP NEXT.
3091 017340  000261                            SEC                     ;YES, "C" = 1, (R1) = NEXM ADDR.
3092 017342  000207                            RTS     PC
3093
3094
3095
3096
3097                                            .SBTTL  TSTLOOP - CHECK ITERATION COUNT
3098                                    ;+
3099                                    ; SUBROUTINE TO EXECUTE TEST ITERATIONS.
3100                                    ; EXIT WITH "C" SET IF LOOPS ALLOWED AND LOOP COUNT NON-ZERO.
3101                                    ; LOOP COUNTER IS SET BY "BEGIN.TEST" MACRO.
3102                                    ;
3103                                    ; CALL: LOOPTO  ARG
3104                                    ;
3105 017344                            TSTLOOP::
3106 017344  005737  002136                    TST     NOITS           ; ITERATIONS INHIBITED?
3107 017350  001006                            BNE     1$              ; YES.
3108 017352  005737  002152                    TST     QVP             ; NO.
3109 017356  100403                            BMI     1$              ;LOOPS DISALLOWED IN QUICK PASS.
3110 017360  005337  002164                    DEC     LOOPCNT         ; BUMP LOOP COUNTER.
3111 017364  001002                            BNE     2$
3112 017366  000241                    1$:     CLC                     ;LOOP DISALLOWED, OR DONE.
3113 017370  000401                            BR      3$
3114 017372  000261                    2$:     SEC                     ;LOOP ENABLED.
3115 017374  000207                    3$:     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 RAISED 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  100016                         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 !D 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
```

```
CZTUZA0 TU80 FRONT END PRT D    MACRO M1200  29-MAR-83 13:43  PAGE 59-1
INCERR  - INCREMENT LOCAL ERROR COUNT

      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
```

```
3283                                            .SBTTL  KTON,KTOFF      - ENABLE/DISABLE MEMORY MANAGEMENT
3284                                    ;
3285                                    ; SUBROUTINE - ENABLE MEM MGT.
3286                                    ;
3287 020216  005737  003100            KTON:   TST     KTFLG           ; GOT KT?
3288 020222  001403                            BEQ     1$              ; NO.
3289 020224  012737  000001  177572            MOV     #1,SR0          ; YES. ENABLE KT11.
3290 020232  000207                    1$:     RTS     PC
3291
3292
3293
3294                                    ;
3295                                    ; SUBROUTINE - DISABLE MEM MGT.
3296                                    ;
3297 020234  005737  003100            KTOFF:  TST     KTFLG           ; GOT KT11?
3298 020240  001405                            BEQ     1$              ; NO.
3299 020242  000240                            NOP
3300 020244  000240                            NOP
3301 020246  012737  000000  177572            MOV     #0,SR0          ; DISABLE KT.
3302 020254  000207                    1$:     RTS     PC
3303
3304
```

```
3306                                    .SBTTL  SETMAP  - SETUP PAR6 MAPPING
3307
3308                                ;+
3309                                ;
3310                                ;THIS ROUTINE SETS UP KERNEL PAR6 TP HANDLE
3311                                ;AN 18 BIT ADDRESS. THE OFFSET INTO THE PAGE
3312                                ;IS RETURNED BIASED TO PAR6.
3313                                ;
3314                                ;INPUTS:
3315                                ;
3316                                ;       R0      HIGH ORDER ADDRESS BITS
3317                                ;       R1      LOW ORDER ADDRESS BITS
3318                                ;
3319                                ;OUTPUTS:
3320                                ;
3321                                ;       R0      OFFSET INTO BLOCK WITH PAR6 BIAS (I.E. THE ADDRESS)
3322                                ;       CARRY   SET IF SUCCESS
3323                                ;               CLR IF ERROR
3324                                ;-
3325 020256                        SETMAP:
3326 020256                                SAVREG                          ;SAVE R1-R4 UNTIL NEXT RETURN
3327 020262  005737  003100                TST     KTFLG                   ;SYSTEM HAVE ABOVE 28K?
3328 020266  001433                        BEQ     10$                     ;BR IF NO
3329 020270  010102                        MOV     R1,R2                   ;SAVE LOW ORDER BITS
3330         000006                        .REPT   6
3331                                       ASR     R0                      ;CONVERT WORD ADDRESS TO 32W BLOCKS
3332                                       ROR     R1                      ;MAKE IT DUUBLE PRECISION
3333                                       .ENDR
3334 020322  042701  000177                BIC     #177,R1                 ;ALINE FOR LOWER 4K BOUNDARY
3335 020326  020137  003100                CMP     R1,KTFLG                ;HIGHER THAN EXISTING MEMORY?
3336 020332  103011                        BHIS    10$                     ;BR IF YES
3337 020334  010137  172354                MOV     R1,@#KIPAR6             ;SETUP MAPPING REGISTER PAR6
3338 020340  042702  160000                BIC     #160000,R2              ;SETUP DISPLACEMENT IN PAGE
3339 020344  062702  140000                ADD     #140000,R2              ;ADD IN PAR6 BIAS
3340 020350  010200                        MOV     R2,R0                   ;RETURN IN R0
3341 020352  000261                        SEC                             ;SET SUCCESS
3342 020354  000401                        BR      15$                     ;
3343 020356  000241                10$:    CLC                             ;SET FAILURE
3344 020360  000207                15$:    RTS     PC                      ;RETURN
3345
```

```
                                        .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
```

CMPMEM - COMPARE MEMORY TO BACKGROUND PATTERN

```
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 COROUTINE 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
```

```
                                        .SBTTL  GETPAT  - GET 8 BIT PATTERN FROM OPERATOR
                                ;+
                                ;
                                ;ROUTINE TO REQUEST AN 8 BIT DATA PATTERN FROM THE OPERATOR
                                ;
                                ;INPUTS:
                                ;
                                ;       NONE.
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      OCTAL NUMBER FROM THE OPERATOR
                                ;
                                ;CALLING SEQUENCE:
                                ;
                                ;       JSR     PC,GETPAT
                                ;
                                ;-
                                GETPAT::
                                        SAVREG                          ;SAVE THE GENERAL REGISTERS
021072  104443                  1$:     GMANID  DATASC,PATDAT,0,377,0,377,NO
021074  000406                          TRAP    C$GMAN
021076  021122                          BR      10000$
021100  000022                          .WORD   PATDAT
021102  021124                          .WORD   T$CODE
021104  000377                          .WORD   DATASC
021106  000000                          .WORD   377
021110  000377                          .WORD   T$LOLIM
021112                                  .WORD   T$HILIM
                                10000$:
021112                                  BNCOMPLETE      1$      ;RETRY IF ERROR
021112  103367                          BCC     1$
021114  013700  021122                  MOV     PATDAT,R0       ;DATA PATTERN FROM OPERATOR
021120  000207                          RTS     PC              ;RETURN TO CALLER
                                ;+
                                ;LOCAL DATA AREA
                                ;-
021122  000000                  PATDAT: .WORD   0               ;TEMPORARY STORAGE FOR DATA
021124    105     116     124   DATASC: .ASCIZ  'ENTER DATA PATTERN'
                                        .EVEN
```

```
                                        .SBTTL  GETSEL  - ISSUE MENU AND GET OPERATOR RESPONSE
                                ;+
                                ;ROUTINE TO ISSUE A MENU AND GET
                                ;THE OPERATOR'S RESPONSE.
                                ;INPUTS:
                                ;       R0      ADDRESS OF ASCIZ STRING OF MENU
                                ;       R1      MAXIMUM ALLOWABLE OPERATOR RESPONSE
                                ;OUTPUTS:
                                ;       R0      NUMBER OF THE OPERATOR'S SELECTION
                                ;-
021150                          GETSEL::
021150                                  SAVREG                  ;SAVE GENERAL REGISTERS
021154  010002                          MOV     R0,R2           ;SAVE THE MENU ADDRESS
021156  010203                  1$:     MOV     R2,R3           ;START OF MENU STRING
021160  005713                  2$:     TST     (R3)            ;END OF ASCII ?
021162  001412                          BEQ     3$              ;BRANCH IF ALL LINES DISPLAYED
021164                                  PRINTF  #SELASC,(R3)+   ;DISPLAY THE MENU
021164  012346                          MOV     (R3)+,-(SP)
021166  012746  021334                  MOV     #SELASC,-(SP)
021172  012746  000002                  MOV     #2,-(SP)
021176  010600                          MOV     SP,R0
021200  104417                          TRAP    C$PNTF
021202  062706  000006                  ADD     #6,SP
021206  000764                          BR      2$
021210                          3$:     GMANID  MENASC,MENRES,D,-1,0,-1,NO
021210  104443                          TRAP    C$GMAN
021212  000406                          BR      10001$
021214  021370                          .WORD   MENRES
021216  000042                          .WORD   T$CODE
021220  021341                          .WORD   MENASC
021222  177777                          .WORD   -1
021224  000000                          .WORD   T$LOLIM
021226  177777                          .WORD   T$HILIM
021230                          10001$:
021230                                  BNCOMPLETE      1$      ;RETRY IF ERROR
021230  103352                          BCC     1$
021232  013700  021370                  MOV     MENRES,R0       ;GET THE OPERATOR'S REPLY
021236  020001                          CMP     R0,R1           ;COMPARE TO MAXIMUM ALLOWED
021240  101411                          BLOS    5$              ;BRANCH IF OK
021242                                  PRINTF  #MENERR         ;DISPLAY ERROR MESSAGE
021242  012746  021266                  MOV     #MENERR,-(SP)
021246  012746  000001                  MOV     #1,-(SP)
021252  010600                          MOV     SP,R0
021254  104417                          TRAP    C$PNTF
021256  062706  000004                  ADD     #4,SP
021262  000735                          BR      1$              ;RETRY
021264  000207                  5$:     RTS     PC              ;RETURN TO CALLER
021266     045     116     045  MENERR: .ASCIZ  '%N%A *** Menu Selection Too Large ***'
021334     045     116     045  SELASC: .ASCIZ  '%N%T'
021341     105     156     164  MENASC: .ASCIZ  'Enter Menu Selection: '
                                        .EVEN
021370  000000                  MENRES:         .WORD   0
```

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

021372                          CHKMAN::
021372                                  SAVREG                  ;SAVE THE REGISTERS
021376                                  MANUAL                  ;SEE IF MANUAL INTERVENTION OK
021376  104450                          TRAP    C$MANI
021400                                  BCOMPLETE 1$            ;BRANCH IF ALLOWED
021400  103411                          BCS     1$
021402                                  PRINTF  #NOMAN          ;PRINT THE WARNING MESSAGE
021402  012746  021426                  MOV     #NOMAN,-(SP)
021406  012746  000001                  MOV     #1,-(SP)
021412  010600                          MOV     SP,R0
021414  104417                          TRAP    C$PNTF
021416  062706  000004                  ADD     #4,SP
021422  000241                          CLC                     ;CLEAR CARRY FOR ERROR
021424  000207                  1$:     RTS     PC              ;RETURN

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
                                ;-
021610                          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 KIPAR7 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                          L$PROT::
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
                                ;-
021752                                  BGNINIT
021752                          L$INIT::
021752                          40$:
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
```

```
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    C$BRK
3741 022216  005237  002150                INC     UNITN           ;...AND SET NEXT UNIT NUMBER.
3742 022222  023737  002150  002012        CMP     UNITN,L$UNIT
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    C$DCLN
3747 022244  000240                11$:    NOP
3748 022246                        PASRPT:
3749 022246  023727  002012  000001        CMP     L$UNIT,#1       ;HOW MANY UNITS SELECTED?
3750 022254  101752                        BLOS    NEWPAS          ;BR IF ONLY 1
3751 022256  005737  002166                TST     DEVCNT          ;ARE ANY STILL RUNNING?
3752 022262  001747                        BEQ     NEWPAS          ;BR IF NO
3753 022264                                RFLAGS  R0
     022264  104421                        TRAP    C$RFLA
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    C$DRPT
3758 022276  000741                        BR      NEWPAS
3759 022300                        10$:
3760
3761 022300                        SETU:   GPHARD  UNITN,R0        ;GET UNIT N P-TABLE POINTER.
     022300  013700  002150                MOV     UNITN,R0
     022304  104442                        TRAP    C$GPHRD
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     #IN:R,(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     L$UNIT,#1       ;ARE WE TESTING MULTIPLE UNITS?
                                                BLOS    10$             ;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  #PR100          ;ENABLE INTERRUPTS.
                                                MOV     #PR100,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

022644                                  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
```

```
 3866                                           .SBTTL  CLEAN-UP AND REPORT CODING SECTIONS
 3867
 3868                                   ;++
 3869                                   ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS
 3870                                   ; EXECUTED AT THE END OF EACH PASS (OR SUB-PASS).
 3871                                   ; USE TO RETURN DEVICE UNDER TEST TO A NEUTRAL STATE.
 3872                                   ;--
 3873 023030                                    BGNCLN
      023030                            L$CLEAN::
 3874 023030  005737  003060                    TST     DUFLG           ;"DROPPED" FLAG IS SET ON...
 3875 023034  100405                            BMI     1$              ;...AND GROSS CONTROLLER FAULT...
 3876                                                                   ;...DON'T TRY TO XCT CLEANUP CODE.
 3877
 3878 023036  012765  000000  000000            MOV     #0,TSSR(R5)     ;DO SOFT INIT
 3879 023044  004737  017110                    JSR     PC,WAITF
 3880 023050                            1$:
 3881 023050                            2$:     ENDCLN
      023050                            L10034:
      023050  104412                            TRAP    C$CLEAN
 3882                                   ;++
 3883                                   ; THE REPORT CODING SECTION CONTAINS THE
 3884                                   ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
 3885                                   ;--
 3886 023052                                    BGNRPT
      023052                            L$RPT::
 3887 023052                                    PRINTS  #DEVSUM
      023052  012746  023314                    MOV     #DEVSUM,-(SP)
      023056  012746  000001                    MOV     #1,-(SP)
      023062  010600                            MOV     SP,R0
      023064  104416                            TRAP    C$PNTS
      023066  062706  000004                    ADD     #4,SP
 3888 023072  010246                            MOV     R2,-(SP)
 3889 023074  010346                            MOV     R3,-(SP)
 3890 023076  010446                            MOV     R4,-(SP)
 3891 023100  012704  003130                    MOV     #ERTABL,R4      ; GET START OF ERROR TABLE.
 3892 023104  005003                            CLR     R3              ; CLEAR UNIT NUMBER
 3893 023106  011402                    1$:     MOV     (R4),R2         ; GET ERROR TABLE ENTRY & TEST IT.
 3894 023110  001467                            BEQ     4$              ; ZERO IF UNIT NOT RUN
 3895 023112  100066                            BPL     4$
 3896 023114  032702  040000                    BIT     #BIT14,R2       ; WAS UNIT DROPPED?
 3897 023120  001015                            BNE     2$              ; BR IF YES
 3898 023122  042702  170000                    BIC     #^C7777,R2      ; GET ERROR COUNT FIELD
 3899 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$PNTS
      023146  062706  000010                    ADD     #10,SP
 3900 023152  000446                            BR      4$
 3901 023154  020227  160000            2$:     CMP     R2,#160000      ; WAS UNIT NON-EXISTENT?
 3902 023160  001012                            BNE     3$              ; BR IF NO
 3903 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
                                ;
                                ;
                                ;
                                ;-
023634                                  BGNTST
023634                                                                          T1::
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,$OFINIT              ;DO INITIALIZE ON CONTROLLER
 3989 023724  103426                    BCS     20$                     ;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$ERHPD
      024024  000146                                                                  .WORD   102
      024026  004754                                                                  .WORD   WRTMSG
      024030  011656                                                                  .WORD   SFIMSG
 4010 024032                    25$:    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
```

```
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
```

```
        024266  000153                                                  .WORD   107
        024270  026670                                                  .WORD   T29NEF
        024272  016334                                                  .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.
                                ;
                                ;
                                ;
                                ;-
4085 024302                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     024302                                                                             T1.2:
     024302  104402                                                                    TRAP    C$BSUB
4086 024304  004737  032130             JSR     PC,T29REST              ;SET COMMAND PACKET
4087 024310  004737  032222             JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
4088 024314  004737  032264             JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
4089 024320  004737  016634             JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4090 024324  103407                     BCS     20$                     ;BR IF INIT WAS OK
4091 024326  004737  020070             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4095 024332  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4096 024334                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     024334  104455                                                                    TRAP    C$ERDF
     024336  000154                                                                    .WORD   108
     024340  003550                                                                    .WORD   SFIERR
     024342  011656                                                                    .WORD   SFIMSG
4097 024344                     20$:
4098
4099 024344  012704  026350             MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4100 024350  004737  010322             JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4101 024354  103407                     BCS     25$                     ;BR, IF COMMAND ISSUED OK
4102 024356  004737  020070             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4106 024362  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4107 024364                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     024364  104456                                                                    TRAP    C$ERHRD
     024366  000155                                                                    .WORD   109
     024370  004754                                                                    .WORD   WRTMSG
     024372  011656                                                                    .WORD   SFIMSG
4108 024374                     25$:    CKLOOP                          ;LOOP IF SELECTED
     024374  104406                                                                    TRAP    C$CLP1
4109 024376  004737  010424     26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4110 024402  016501  000000             MOV     TSSR(R5),R1             ;GET TSSR
4111 024406  012702  000200             MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
4112 024412  103407                     BCS     30$                     ;BR, IF NO PROBLEM
4113 024414  010004                     MOV     R0,R4                   ;PACKET ADDRESS SET UP
4114 024416  004737  020070             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4118 024422                             ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
     024422  104456                                                                    TRAP    C$ERHRD
     024424  000156                                                                    .WORD   110
     024426  030260                                                                    .WORD   T29RWN
     024430  011670                                                                    .WORD   PKTSSR
4119 024432                     30$:    CKLOOP                          ;LOOP IF SELECTED
     024432  104406                                                                    TRAP    C$CLP1
4120 024434  013701  026376             MOV     T29BFR+6,R1             ;PICK UP XSTO
4121 024440  010102                     MOV     R1,R2                   ;SET UP EXPECTED
4122 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
```

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                024710  104456                                                          TRAP    C$ERHRD
                024712  000162                                                          .WORD   114
                024714  027622                                                          .WORD   T29WDE
                024716  011670                                                          .WORD   PKTSSR
  4178          024720                          180$:   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
```

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                                        ;+
                                        ;
                                        ;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).
                                        ;
                                        ;-
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,SOFINIT              ;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                                                             RAP    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$ERHRD
     025140  000166                                                            .WORD   118
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        025142  030260                                                          .WORD   T29RWN
        025144  011670                                                          .WORD   PKTSSR
  4237  025146                          30$:    CKLOOP                        ;LOOP IF SELECTED
        025146  104406                                                          TRAP    C$CLP1
  4238  025150  013701  026376                  MOV     T29BFR+6,R1           ;PICK UP XSTO
  4239  025154  010102                          MOV     R1,R2                 ;SET UP EXPECTED
  4240  025156  052702  000002                  BIS     #BIT1,R2              ;SET BOT BIT IN EXPECTED
  4241  025162  020102                          CMP     R1,R2                 ;DOES EXP = REC'D
  4242  025164  001406                          BEQ     40$                   ;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
        025172  104456                                                          TRAP    C$ERHRD
        025174  000167                                                          .WORD   119
        025176  027751                                                          .WORD   T29BOT
        025200  016334                                                          .WORD   EXPREC
  4248  025202                          40$:    CKLOOP                        ;LOOP IF SELECTED
        025202  104406                                                          TRAP    C$CLP1
  4249  025204  012737  140011  026500          MOV     #140011,T29PK3        ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
  4250  025212  012704  026500                  MOV     #T29PK3,R4            ;SET UP R4 WITH PACKET ADDRESS
  4251  025216  010465  177776                  MOV     R4,TSDB(R5)           ;ISSUE COMMAND
  4252  025222  004737  017110                  JSR     PC,WAITF              ;WAIT FOR SSR TO SET
  4253  025226  016501  000000                  MOV     TSSR(R5),R1           ;GET TSSR CONTENTS
  4254  025232  012702  000200                  MOV     #SSR,R2               ;SET UP EXPECTED
  4255  025236  020102                          CMP     R1,R2                 ;ARE THEY EQUAL
  4256  025240  001406                          BEQ     70$                   ;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
        025246  104456                                                          TRAP    C$ERHRD
        025250  000170                                                          .WORD   120
        025252  030577                                                          .WORD   T29WDC
        025254  011670                                                          .WORD   PKTSSR
  4262  025256                          70$:    CKLOOP                        ;LOOP IF SELECTED
        025256  104406                                                          TRAP    C$CLP1
  4263  025260  012703  000001          150$:   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.
        025326  104456                                                          TRAP    C$ERHRD
        025330  000171                                                          .WORD   121
        025332  030577                                                          .WORD   T29WDC
        025334  011670                                                          .WORD   PKTSSR
  4277  025336                          165$:   CKLOOP                        ;LOOP IF SELECTED
        025336  104406                                                          TRAP    C$CLP1
  4278  025340  012737  140401  026500          MOV     #140401,T29PK3        ;READ REVERSE,ACK, COMMAND
  4279  025346  013737  003072  026502          MOV     FREE,T29RB            ;NUMBER OF RECORDS TO SPACE BACK
  4280  025354  012704  026500                  MOV     #T29PK3,R4            ;SET UP R4 WITH PACKET ADDRESS
  4281  025360  010465  177776                  MOV     R4,TSDB(R5)           ;ISSUE COMMAND
  4282  025364  004737  017110                  JSR     PC,WAITF              ;WAIT FOR SSR TO SET
  4283  025370  016501  000000                  MOV     TSSR(R5),R1           ;GET TSSR CONTENTS
  4284  025374  012702  100204                  MOV     #SSR!SC!BIT2,R2       ;SET UP EXPECTED
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 4285 025400  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 4286 025402  001406                        BEQ     222$                    ;BR, IF OK
 4287 025404  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4291 025410                                ERRHRD  E^RNO,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
```

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                                        ;+
                                        ;
                                        ;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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                025640  104456                                                          TRAP    C$ERHRD
                025642  000176                                                          .WORD   126
                025644  030260                                                          .WORD   T29RWN
                025646  011670                                                          .WORD   PKTSSR
 4353           025650                  30$:    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
                025674  104456                                                          TRAP    C$ERHRD
                025676  000177                                                          .WORD   127
                025700  027751                                                          .WORD   T29BOT
                025702  016334                                                          .WORD   EXPREC
 4364           025704                  40$:    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
                025750  104456                                                          TRAP    C$ERHRD
                025752  000200                                                          .WORD   128
                025754  030577                                                          .WORD   T29WDC
                025756  011670                                                          .WORD   PKTSSR
 4378           025760                  70$:    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.
                026036  104456                                                          TRAP    C$ERHRD
                026040  000201                                                          .WORD   129
                026042  030577                                                          .WORD   T29WDC
                026044  011670                                                          .WORD   PKTSSR
 4394           026046                  165$:   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
```

```
 4442 026320                          330$:   CKLOOP                          ;LOOP IF SELECTED
      026320  104406                                                                  TRAP    C$CLP
 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  00013?  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-<.-TUV2A87>
 4459 026350                            T29PACKET:                      ;COMMAND PACKET FOR TEST
 4460 026350  014004                            .WORD   14004           ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
 4461 026352  026360                            .WORD   T29DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
 4462 026354  000000                            .WORD   0
 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-<.-TUV2A87>
 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-<.-TUV2A87>
 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
```

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CZTUZA0 TU80 FRONT END PRT D    MACRO M1200  29-MAR-83 13:43  PAGE 82
TEST  1: WRITE TAPE MARK RETRY


                                        ;+
                                        ;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 (XST0)'
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  T29LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
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 XST0'
031207  122  145  141  T29LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
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 (XST0) 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    CSETST
```

```
                                        .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
                                ;
                                ;
                                ;
                                ;-
032316                                  BGNTST
032316                                                                  T2::
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                                  BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
032352                                                                  T2.1:
032352  104402                                                          TRAP    C$BSUB
```

```
 4663 032354  004737  041132                JSR     PC,T30REST              ;SET COMMAND PACKET
 4664 032360  005037  036534                CLR     T30FCN                  ;CLEAR FILE COUNTER
 4665 032364  004737  041224                JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
 4666 032370  004737  041266                JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
 4667 032374  012737  176750  036536        MOV     #65000.,T30DLY          ;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$DLY,(PC)+
      032422  000000                                                                .WORD   0
      032424  005367  177772                                                        DEC     -6(PC)
      032430  001375                                                                BNE     .-4
      032432  005367  177756                                                        DEC     -22(PC)
      032436  001367                                                                BNE     .-20
 4671 032440  005337  036536                DEC     T30DLY                  ;BUMP COUNTER
 4672 032444  001356                BNE     10$                             ;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     #T30PACKET,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
```

```
 4709 032532  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4713 032536                                ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
      032536  104456                                                        TRAP    C$ERHRD
      032540  000313                                                        .WORD   203
      032542  040120                                                        .WORD   T30RWN
      032544  011670                                                        .WORD   PKTSSR
 4714 032546                        30$:    CKLOOP                          ;LOOP IF SELECTED
      032546  104406                                                        TRAP    C$CLP1
 4715
 4716                                ;*************************************************************
 4717                                ;
 4718                                ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
 4719                                ;
 4720                                ;*************************************************************
 4721
 4722 032550  013701  036376                MOV     T30BFR+6,R1             ;PICK UP XST0
 4723 032554  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 4724 032556  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 4725 032562  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 4726 032564  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 4727 032566  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4731 032572                                ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      032572  104456                                                        TRAP    C$ERHRD
      032574  000314                                                        .WORD   204
      032576  037721                                                        .WORD   T30BOT
      032600  016334                                                        .WORD   EXPREC
 4732 032602                        40$:    CKLOOP                          ;LUOP IF SELECTED
      032602  104406                                                        TRAP    C$CLP1
 4733 032604  012737  000001  036534        MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
 4734 032612  012703  000001        64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
 4735 032616  013737  003072  036502  65$:  MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
 4736 032624  012737  003720  036506        MOV     #2000.,T30SZ            ;SET RECORD SIZE AT 2000 BYTES
 4737
 4738                                ;*************************************************************
 4739                                ;
 4740                                ;WRITE DATA,ACK,CVC=1 COMMAND
 4741                                ;
 4742                                ;*************************************************************
 4743
 4744 032632  012737  140005  036500        MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 4745 032640  012704  036500                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4746 032644  013702  036534                MOV     T30FCN,R2               ;GET FILE COUNTER
 4747 032650  000302                        SWAB    R2                      ;MOVE TO UPPER BYTE
 4748 032652  010301                        MOV     R3,R1                   ;GET RECORD COUNTER
 4749 032654  060201                        ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
 4750 032656  010177  150210                MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
 4751 032662  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4752 032666  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 4753 032672  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4754 032676  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 4755 032702  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 4756 032704  001406                        BEQ     70$                     ;BR, IF OK
 4757 032706  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4761                                                                       ;SOFT ERROR, DON'T CARE ABOUT WRITE
 4762                                                                       ;COMMAND'S RESULTS - CHECKING SKIP
 4763                                                                       ;TAPE MARK COMMAND
 4764 032712                                ERRSOFT ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
```

```
        032712  104457                                                          TRAP    C$ERSOFT
        032714  000315                                                          .WORD   205
        032716  037050                                                          .WORD   T30WDD
        032720  011670                                                          .WORD   PKTSSR
  4765  032722                          70$:    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$CLP1
 4814
 4815                          ;*************************************************************
 4816                          ;
 4817                          ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
 4818                          ;
 4819                          ;*************************************************************
 4820
 4821 033100  004737  010424          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 4822 033104  103411                  BCS     170$                    ;BR, IF NO PROBLEM
 4823 033106  010004                  MOV     R0,R4                   ;GET PACKET ADDRESS
 4824 033110  016501  000000          MOV     TSSR(R5),R1             ;GET STATUS REGISTER
 4825 033114  004737  020070          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4829 033120                          ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
      033120  104456                                                          TRAP    C$ERHRD
      033122  000320                                                          .WORD   208
      033124  040120                                                          .WORD   T30RWN
      033126  011670                                                          .WORD   PKTSSR
 4830 033130                          170$:   CKLOOP                  ;LOOP IF SELECTED
      033130  104406                                                          TRAP    C$CLP1
 4831
 4832                          ;*************************************************************
 4833                          ;
 4834                          ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
 4835                          ;
 4836                          ;*************************************************************
 4837
 4838 033132  013701  036376          MOV     T30BFR+6,R1             ;PICK UP XST0
 4839 033136  010102                  MOV     R1,R2                   ;SET UP EXPECTED
 4840 033140  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 4841 033144  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
 4842 033146  001406                  BEQ     180$                    ;BR, IF EQUAL (OK)
 4843 033150  004737  020070          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4847 033154                          ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      033154  104456                                                          TRAP    C$ERHRD
      033156  000321                                                          .WORD   209
      033160  037721                                                          .WORD   T30BOT
      033162  016334                                                          .WORD   EXPREC
 4848 033164                          180$:   CKLOOP                  ;LOOP IF SELECTED
      033164  104406                                                          TRAP    C$CLP1
 4849 033166  012703  036516          MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
 4850
 4851 033172  011337  036366  182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
 4852 033176  012704  036350          MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 4853
 4854                          ;*************************************************************
 4855                          ;
 4856                          ;ISSUE WRITE CHARACTERISTICS COMMAND
 4857                          ;
 4858                          ;*************************************************************
 4859
 4860 033202  004737  010322          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 4861 033206  103407                  BCS     188$                    ;BR, IF COMMAND ISSUED OK
 4862 033210  004737  020070          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4866 033214  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 4867 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
```

```
                033406  104456                                                          TRAP    C$ERHRD
                033410  000324                                                          .WORD   212
                033412  040374                                                          .WORD   T30TMK
                033414  016334                                                          .WORD   EXPREC
 4914           033416                  195$:   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
```

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

033604  004737  010424                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
033610  103411                          BCS     230$                    ;BR, IF NO PROBLEM
033612  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
033614  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
033620  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
033624                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
033624  104456                                                                  TRAP    C$ERHRD
033626  000330                                                                  .WORD   216
033630  040120                                                                  .WORD   T30RWN
033632  011670                                                                  .WORD   PKTSSR
033634                          230$:   CKLOOP                          ;LOOP IF SELECTED
033634  104406                                                                  TRAP    C$CLP1

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

033636  013701  036376                  MOV     T30BFR+6,R1             ;PICK UP XST0
033642  010102                          MOV     R1,R2                   ;SET UP EXPECTED
033644  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
033650  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
033652  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
033654  004737  020070                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
033660                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
033660  104456                                                                  TRAP    C$ERHRD
033662  000331                                                                  .WORD   217
033664  037721                                                                  .WORD   T30BOT
033666  016334                                                                  .WORD   EXPREC
033670                          240$:   CKLOOP                          ;LOOP IF SELECTED
033670  104406                                                                  TRAP    C$CLP1
033672  005723                          TST     (R3)+                   ;POINT TO NEXT POSITION
033674  011301                          MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
033676  020127  177777                  CMP     R1,#177777              ;END OF TABLE MARKER
033702  001402                          BEQ     330$                    ;BR, IF AT END OF TABLE
033704  000137  033172                  JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
033710                          330$:   CKLOOP                          ;LOOP IF SELECTED
033710  104406                                                                  TRAP    C$CLP1
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.
                                        ;
                                        ;
                                        ;
                                        ;-
                                
033714                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
033714                                                                                  T2.2:
033714  104402                                                                          TRAP    C$BSUB
033716  004737  041132                        JSR     PC,T30REST              ;SET COMMAND PACKET
033722  005037  036534                        CLR     T30FCN                  ;CLEAR FILE COUNTER
033726  004737  041224                        JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
033732  004737  041266                        JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
033736  012737  176750  036536                MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
033744  004737  016634          10$:          JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
033750  103426                                BCS     20$                     ;BR IF INIT WAS OK
033752                                        DELAY   250                     ;DELAY ROUTINE CALL
033752  012727  000250                                                          MOV     #250,(PC)+
033756  000000                                                                  .WORD   0
033760  013727  002116                                                          MOV     L$DLY,(PC)+
033764  000000                                                                  .WORD   0
033766  005367  177772                                                          DEC     -6(PC)
033772  001375                                                                  BNE     .-4
033774  005367  177756                                                          DEC     -22(PC)
034000  001367                                                                  BNE     .-20
034002  005337  036536                        DEC     T30DLY                  ;BUMP COUNTER
034006  001356                                BNE     10$                     ;BR, IF MORE COUNTING TO DO
034010  004737  020070                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
034014  010001                                MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
034016                                        ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
034016  104455                                                                  TRAP    C$ERDF
034020  000332                                                                  .WORD   218
034022  003550                                                                  .WORD   SFIERR
034024  011656                                                                  .WORD   SFIMSG
034026                          20$:
                                
034026  012704  036350                        MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                
                                        ;*************************************************************
                                        ;
                                        ;ISSUE WRITE CHARACTERISTICS COMMAND
                                        ;
                                        ;*************************************************************
                                
034032  004737  010322                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
034036  103407                                BCS     23$                     ;BR, IF COMMAND ISSUED OK
034040  004737  020070                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
034044  010001                                MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
034046                                        ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
034046  104456                                                                  TRAP    C$ERHRD
```

TEST 2: SKIP TAPE MARKS

```
                034050  000333                                                          .WORD   219
                034052  004754                                                          .WORD   WRTMSG
                034054  011656                                                          .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 U? 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
   5304         035120                  220$:   CKLOOP                  ;LOOP IF SELECTED
                035120  104406                                                          TRAP    C$CLP1
   5305         035122  013702  036534                MOV     T30FCN,R2               ;GET NUMBER OF SKIPS
   5306         035126  005202                        INC     R2                      ;SET TO CORRECT FILE VALUE
   5307         035130  000302                        SWAB    R2                      ;SWAP BYTE HALVES
   5308         035132  052702  000001                BIS     #BIT0,R2                ;SET FOR RECORD #1
   5309         035136  017701  145730                MOV     @FREE,R1                ;GET INFO FROM BUFFER
   5310         035142  020201                        CMP     R2,R1                   ;ARE THEY EQUAL
   5311         035144  001406                        BEQ     228$                    ;BR, IF EQUAL (OK)
   5312         035146  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5316         035152                                ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
                035152  104456                                                          TRAP    C$ERHRD
                035154  000350                                                          .WORD   232
                035156  037122                                                          .WORD   T30PTB
                035160  016334                                                          .WORD   EXPREC
   5317         035162                  228$:   CKLOOP                  ;LOOP IF SELECTED
                035162  104406                                                          TRAP    C$CLP1
   5318
   5319                                ;*********************************************************
   5320                                ;
   5321                                ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
   5322                                ;
   5323                                ;*********************************************************
   5324
   5325         035164  004737  010424                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
   5326         035170  103411                        BCS     230$                    ;BR, IF NO PROBLEM
   5327         035172  010004                        MOV     R0,R4                   ;SAVE PACKET ADDRESS
   5328         035174  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR STATUS
   5329         035200  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5333         035204                                ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
                035204  104456                                                          TRAP    C$ERHRD
                035206  000351                                                          .WORD   233
                035210  040120                                                          .WORD   T30RWN
                035212  011670                                                          .WORD   PKTSSR
   5334         035214                  230$:   CKLOOP                  ;LOOP IF SELECTED
                035214  104406                                                          TRAP    C$CLP1
   5335
   5336                                ;*********************************************************
   5337                                ;
   5338                                ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
   5339                                ;
   5340                                ;*********************************************************
   5341
   5342         035216  013701  036376                MOV     T30BFR+6,R1             ;PICK UP XST0
   5343         035222  010102                        MOV     R1,R2                   ;SET UP EXPECTED
   5344         035224  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
   5345         035230  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
   5346         035232  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
   5347         035234  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5351         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$:  CKLOOP                  ;LOOP IF SELECTED
     035250  104406                                                                TRAP    CSCLP1
5353 035252  005723                         TST     (R3)+          ;POINT TO NEXT POSITION
5354 035254  011301                         MOV     (R3),R1        ;GET NEXT COMMAND ETC.
5355 035256  020127  177777                 CMP     R1,#177777     ;END OF TABLE MARKER
5356 035262  001410                         BEQ     330$           ;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    CSCLP1
5363 035306                                 ENDSUB                 ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     035306                                                                  L10045:
     035306  104403                                                                TRAP    CSESUB
```

```
                                        ;+
                                        ;
                                        ;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.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
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,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     035474  104456                                                                TRAP    C$ERHRD
     035476  000355                                                                .WORD   237
     035500  040120                                                                .WORD   T30RWN
     035502  011670                                                                .WORD   PKTSSR
5432 035504                     30$:    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
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 4
                                        ;
                                        ;
                                        ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
                                        ;ISSUED WHILE THE TAPE IS POSITIONED JUST BEFORE THE
                                        ;FIRST RECORD ON ON TAPE (BUT NOT AT BOT) CAUSES TAPE
                                        ;STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT
                                        ;(RIB) STATUS BIT SET.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
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
```

```
                                        MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
                                        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$ERSOFT
                                                                                .WORD   245
                                                                                .WORD   T30WDD
                                                                                .WORD   PKTSSR
                                70$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1

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

                                        MOV     #1,T30WB                ;# OF TM TO SKIP
                                        MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
                                        MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
                                        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
                                        JSR     PC,WAITF                ;WAIT FOR SSR TO SET
                                        MOV     TSSR(R5),R1             ;PICK UP TSSR
                                        MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED (SSR AND SC ONLY)
                                        CMP     R1,R2                   ;WAS STATUS GOOD
                                        BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                        ERRHRD  ERRNO,T30IBU,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
                                                                                TRAP    C$ERHRD
                                                                                .WORD   246
                                                                                .WORD   T30IBU
                                                                                .WORD   PKTSSR
                                160$:   CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1

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

                                        MOV     T30BFR+14,R1            ;PICK UP XST3
                                        MOV     R1,R2                   ;SET UP EXPECTED
                                        BIS     #BIT0,R2                ;SET RIB BIT IN EXPECTED
                                        CMP     R1,R2                   ;DOES EXP = REC'D
                                        BEQ     170$                    ;BR, IF EQUAL (OK)
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                        ERRHRD  ERRNO,T30RIB,EXPREC     ;TAPE NOT AT RIB
                                                                                TRAP    C$ERHRD
```

```
        036312  000367                                                  .WORD   247
        036314  036625                                                  .WORD   T30R1B
        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-<.-TUV2A87>
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  000C24                             .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-<.-TUV2A87>
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-<.-TUV2A87>
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
```

```
5715                                    ;+
5716                                    ;LOCAL TEXT MESSAGES FOR TEST
5717                                    ;-
5718
5719
5720 036540  124  123  123  T30IBU: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Into BOT'
5721 036625  122  111  102  T30RIB: .ASCIZ  'RIB Bit (XST3) Failed To Set After Reverse Into BOT'
5722 036711  124  123  123  T30IBT: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At BOT'
5723 036774  124  123  123  T30SKM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK Command'
5724 037050  124  123  123  T30WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
5725 037122  124  141  160  T30PTB: .ASCIZ  'Tape Not Positioned On Correct Record After READ REVERSE'
5726 037213  124  141  160  T30TPB: .ASCIZ  'Tape Not Positioned On Second File First Record'
5727 037273  124  123  123  T30RDF: .ASCIZ  'TSSR Incorrect After READ FORWARD Into "File"'
5728 037351  124  123  123  T30RDG: .ASCIZ  'TSSR Incorrect After SPACE Command Into TAPE MARK'
5729 037433  124  123  123  T30WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
5730 037510  111  154  154  T30LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
5731 037571  127  122  111  T30SSR: .ASCIZ  'WRITE MISCELLANEOUS Command Not Accepted'
5732 037642  124  123  123  T30WDE: .ASCIZ  'TSSR Not Correct After SKIP TAPE MARKS, At BOT'
5733 037721  124  141  160  T30BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
5734 037766  124  123  123  T30TM:  .ASCIZ  'TSSR Not Correct After SPACE FORWARD Command'
5735 040043  124  123  123  T30TM2: .ASCIZ  'TSSR Not Correct After SPACE REVERSE Command'
5736 040120  122  145  167  T30RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
5737 040167  104  162  151  T30OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
5738 040242  124  123  123  T30WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK Command'
5739 040321  103  126  103  T30VCK: .ASCIZ  'CVC Set, Didn't Reset VCK In Message Buffer'
5740 040374  124  115  113  T30TMK: .ASCIZ  'TMK Not Set After WRITE TAPE MARK (RETRY) Command'
5741 040456  123  113  111  T30NEF: .ASCIZ  'SKIP TAPE MARKS, At BOT, Failed To Set NEF Bit'
5742 040535  124  115  113  T30RRM: .ASCIZ  'TMK Not Set After READ REVERSE Into TAPE MARK'
5743 040613  124  115  113  T30RRN: .ASCIZ  'TMK Not Set After SPACE REVERSE Into TAPE MARK'
5744 040672  124  115  113  T30RRP: .ASCIZ  'TMK Not Set After READ FORWARD Into TAPE MARK'
5745 040750  116  117  040  T30DTR: .ASCIZ  'NO Data Transferred On READ FORWARD'
5746 041014  104  141  164  T30DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
5747 041111  123  153  151  TST30ID:        .ASCIZ  'Skip Tape Marks'
5748                                .EVEN
5749                                    ;+
5750                                    ;
5751                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
5752                                    ;WRITE SUBSYSTEM MEMORY COMMAND
5753                                    ;
5754                                    ;-
5755
5756 041132                          T30REST:
5757 041132                                  SAVREG                          ;SAVE THE REGISTERS
5758 041136  012701  036350                  MOV     #T30PACKET,R1           ;START OF THE PACKET
5759 041142  012721  100004                  MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
5760 041146  012721  036360                  MOV     #T30DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
5761 041152  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
5762 041154  012721  000012                  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
5763 041160  012721  036370                  MOV     #T30BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
5764 041164  005021                          CLR     (R1)+
5765 041166  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
5766 041172  005021                          CLR     (R1)+
5767 041174  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
5768 041200  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
5769 041204  012762  177777  036370  64$:    MOV     #177777,T30BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
5770 041212  005742                          TST     -(R2)                   ;NEXT LOCATION
5771 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
      041310                                                                    L10043:
      041310  104401                                                                   TRAP    C$ETST
```

```
 5798                                           .SBTTL  TEST  3: NO-OP (''CLEAN TAPE'') AND INITIALIZE
 5799                                   ;+
 5800                                   ;
 5801                                   ;THIS TEST VERIFIES PROPER OPERATION OF THE NO-OP (''CLEAN TAPE'') AND INITIALIZE
 5802                                   ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
 5803                                   ;
 5804                                   ;
 5805                                   ;THE TEST CONSISTS OF THE FOLLOWING 2 SUBTESTS
 5806                                   ;
 5807                                   ;
 5808                                   ;
 5809                                   ;-
 5810 041312                                    BGNTST
      041312                                                                              T3::
 5811 041312  005037  002170                    CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
 5812 041316  005037  003100                    CLR     KTFLG                   ;HOLD OFF KT11
 5813 041322  012737  005672  002146           MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
 5818 041330  012700  046403                    MOV     #TST31ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
 5819 041334  004737  017376                    JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
 5820 041340  012737  000002  002164           MOV     #2,LOOPCNT              ;PERFORM 2 ITERATIONS
 5821 041346  005037  043176                    CLR     T31CNT                  ;CLEAR TAPE RECORD COUNTER
 5822                                   ;
 5823                                   ;-
 5824
 5825 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,$OFINIT              ;DO INITIALIZE ON CONTROLLER
5854 041402  103426                    BCS     20$                             ;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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CZTUZA0 TU80 FRONT END PRT D    MACRO M1200  29-MAR-83 13:43  PAGE 91-1
TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE

        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                          ;LOOP 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,CYC=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
```

```
 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
```

```
                                        ;+
                                        ;
                                        ;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.
                                        ;
                                        ;-
6002 042206                                     BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     042206                                                                                     T3.2:
     042206  104402                                                                            TRAP    C$BSUB
6003 042210  004737  046450                     JSR     PC,T31REST              ;SET COMMAND PACKET
6004 042214  004737  046542                     JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
6005 042220  004737  046604                     JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
6006 042224  004737  016634                     JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
6007 042230  103407                            BCS     20$                     ;BR IF INIT WAS OK
6008 042232  004737  020070                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6012 042236  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
6013 042240                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     042240  104455                                                                            TRAP    C$ERDF
     042242  000470                                                                            .WORD   312
     042244  003550                                                                            .WORD   SFIERR
     042246  011656                                                                            .WORD   SFIMSG
6014 042250                             20$:
6015 042250  012704  043020                     MOV     #T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
6016 042254  004737  010322                     JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
6017 042260  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
6018 042262  004737  020070                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6022 042266  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
6023 042270                                     ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     042270  104456                                                                            TRAP    C$ERHRD
     042272  000471                                                                            .WORD   313
     042274  004754                                                                            .WORD   WRTMSG
     042276  011656                                                                            .WORD   SFIMSG
6024 042300                             23$:    CKLOOP                          ;LOOP IF SELECTED
     042300  104406                                                                            TRAP    C$CLP1
6025 042302  004737  010424                     JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6026 042306  103407                            BCS     30$                     ;BR, IF NO PROBLEM
6027 042310  010004                            MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
6028 042312  004737  020070                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6032 042316                                     ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
     042316  104456                                                                            TRAP    C$ERHRD
     042320  000472                                                                            .WORD   314
     042322  044534                                                                            .WORD   T31RWN
     042324  011670                                                                            .WORD   PKTSSR
6033 042326                             30$:    CKLOOP                          ;LOOP IF SELECTED
     042326  104406                                                                            TRAP    C$CLP1
6034 042330  013701  043C46                     MOV     T31BFR+6,R1             ;PICK UP XSTO
6035 042334  010102                            MOV     R1,R2                   ;SET UP EXPECTED
6036 042336  052702  000002                     BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6037 042342  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
6038 042344  001406                            BEQ     40$                     ;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
```

```
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$CLP1
6127 042744  017701  140122                MOV     @FREE,R1              ;GET DATA READ
6128 042750  012702  000144                MOV     #100.,R2              ;READ EXPECTED
6129 042754  020102                        CMP     R1,R2                 ;DID TAPE STAY POS.TIONED
6130 042756  001406                        BEQ     330$                  ;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
                042774  104403                                                  L10052:
                                                                                        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
                                        ;-
                                T31PACKET:      .BLKB   10-<.-TUV2A&7>
                                                .WORD   100004          ;COMMAND PACKET FOR TEST
                                                .WORD   T31DATA         ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
                                                .WORD   0               ;ADDRESS OF CHARACTERISTICS BLOCK
                                                .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-<.-TUV2A&7>
                                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-<.-TUV2A&7>
                                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
```

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


043204  124  123  123  T31RDE: .ASCIZ  'TSSR Not Correct After READ Command'
043250  124  141  160  T31WNH: .ASCIZ  'Tape Position Incorrect After INITIALIZE Command'
043331  124  141  160  T31WNG: .ASCIZ  'Tape Position Incorrect After NOP Command'
043403  124  123  123  T31RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
043452  122  105  122  T31RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
043547  120  117  123  T31SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
043631  122  111  102  T31LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
043701  124  123  123  T31WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
043756  111  154  154  T31LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
044037  122  105  122  T31SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
044073  124  123  123  T31WDE: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command,At BOT'
044205  124  141  160  T31BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
044300  116  117  055  T31TIM: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE''S Erase Tape Not Long Enough'
044400  122  105  122  T31EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
044457  124  123  123  T31TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
044534  122  145  167  T31RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
044603  122  101  115  T31RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
044656  124  123  123  T31AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
044725  104  162  151  T31OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
045000  124  123  123  T31WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
045070  124  123  123  T31WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
045143  103  126  103  T31VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
045216  124  123  102  T31BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
045271  127  122  111  T31WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
045360  122  145  141  T31LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
045442  122  145  141  T31LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
045524  122  145  163  T31PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
045612  122  145  141  T31TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
045700  116  117  055  T31NEF: .ASCIZ  'NO-OP AND INITIALIZE, At First Record, Failed To Set RIB Bitin XSTAT3'
046021  124  123  123  T31SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
046076  124  123  123  T31TSA: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE, Into BOT'
046203  124  123  123  T31WRF: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command'
046306  104  141  164  T31DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
046403  116  117  055  TST31ID:       .ASCIZ  'NO-OP ("Clean Tape") And INITIALIZE'
                                        .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

046450                                  T31REST:
046450                                          SAVREG                          ;SAVE THE REGISTERS
046454  012701  043020                          MOV     #T31PACKET,R1           ;START OF THE PACKET
046460  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
046464  012721  043030                          MOV     #T31DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
046470  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
046472  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
046476  012721  043040                          MOV     #T31BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
```

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 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:
```

```
 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$ERHRD
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                047316  000627                                                  .WORD   407
                047320  051616                                                  .WORD   T32ERA
                047322  011670                                                  .WORD   PKTSSR
6445            047324                  50$:    CKLOOP                          ;LOOP IF SELECTED
                047324  104406                                                  TRAP    C$CLP1
6446            047326  013701  051146        MOV     T32BFR+6,R1             ;PICK UP XST0
6447            047332  010102                MOV     R1,R2                   ;SET UP EXPECTED
6448            047334  042702  000002        BIC     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6449            047340  020102                CMP     R1,R2                   ;DOES EXP = REC'D
6450            047342  001406                BEQ     55$                     ;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.
                                ;
                                ;-
047506                          BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
047506                                                                      T4.2:
047506  104402                                                              TRAP    C$BSUB
047510  004737  052500        JSR     PC,T32REST      ;SET COMMAND PACKET
047514  004737  052572        JSR     PC,T32RT2       ;SET UP OTHER COMMAND PACKET
047520  004737  052622        JSR     PC,T32RT3       ;SET UP OTHER COMMAND PACKET
047524  004737  016634        JSR     PC,$OFINIT      ;DO INITIALIZE ON CONTROLLER
047530  103407                BCS     20$             ;BR IF INIT WAS OK
047532  004737  020070        JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
047536  010001                MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
047540                        ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
047540  104455                                                              TRAP    C$ERDF
047542  000633                                                              .WORD   411
047544  003550                                                              .WORD   SFIERR
047546  011656                                                              .WORD   SFIMSG
047550                  20$:
047550  012704  051120        MOV     #T32PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
047554  004737  010322        JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
047560  103407                BCS     23$             ;BR, IF COMMAND ISSUED OK
047562  004737  020070        JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
047566  010001                MOV     R0,R1           ;SAVE CONTENTS OF TSSR
047570                        ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
047570  104456                                                              TRAP    C$ERHRD
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                047572  000634                                                  .WORD   412
                047574  004754                                                  .WORD   WRTMSG
                047576  011656                                                  .WORD   SFIMSG
   6542         047600                  23$:    CKLOOP                          ;LOOP IF SELECTED
                047600  104406                                                  TRAP    C$CLP1
   6543         047602  004737  010424          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
   6544         047606  103407          BCS     30$                             ;BR, IF NO PROBLEM
   6545         047610  010004          MOV     R0,R4                           ;SET UP REWIND PACKET ADDRESS
   6546         047612  004737  020070          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   6550         047616                  ERRHRD  ERRNO,T32RWN,PKTSSR             ;REWIND NOT ACCEPTED
                047616  104456                                                  TRAP    C$ERHRD
                047620  000635                                                  .WORD   413
                047622  051500                                                  .WORD   T32RWN
                047624  011670                                                  .WORD   PKTSSR
   6551         047626                  30$:    CKLOOP                          ;LOOP IF SELECTED
                047626  104406                                                  TRAP    C$CLP1
   6552         047630  013701  051146          MOV     T32BFR+6,R1             ;PICK UP XSTO
   6553         047634  010102          MOV     R1,R2                           ;SET UP EXPECTED
   6554         047636  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
   6555         047642  020102          CMP     R1,R2                           ;DOES EXP = REC'D
   6556         047644  001406          BEQ     40$                             ;BR, IF EQUAL (OK)
   6557         047646  004737  020070          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   6561         047652                  ERRHRD  ERRNO,T32BOT,EXPREC             ;TAPE NOT AT BOT AFTER REWIND
                047652  104456                                                  TRAP    C$ERHRD
                047654  000636                                                  .WORD   414
                047656  051316                                                  .WORD   T32BOT
                047660  016334                                                  .WORD   EXPREC
   6562         047662                  40$:    CKLOOP                          ;LOOP IF SELECTED
                047662  104406                                                  TRAP    C$CLP1
   6563         047664  012703  000144          MOV     #100.,R3                ;STARTING RECORD SIZE
   6564         047670  010300          MOV     R3,R0                           ;SET UP MEMORY FILL
   6565         047672  004737  020362          JSR     PC,FILLMEM              ;CALL MEMORY FILLER
   6566         047676  013737  003072  051252  MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
   6567         047704  012737  140005  051250  65$:    MOV     #140005,T32PK3  ;WRITE DATA,CVC=1,ACK COMMAND
   6568         047712  012704  051250          MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   6569         047716  010300          MOV     R3,R0                           ;SET PATTERN IN CORRECT REGISTER
   6570         047720  004737  020362          JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
   6571         047724  010337  051256          MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
   6572         047730  010465  177776          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   6573         047734  004737  017110          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   6574         047740  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   6575         047744  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
   6576         047750  020102          CMP     R1,R2                           ;ARE THEY EQUAL
   6577         047752  001406          BEQ     80$                             ;BR, IF OK
   6578         047754  004737  020070          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
   6582                                                                          ;SOFT ERROR, DON'T CARE ABOUT WRITE
   6583                                                                          ;COMMAND'S RESULTS - CHECKING THE
   6584                                                                          ;ERASE COMMAND
   6585         047760                  ERRSOFT ERRNO,T32WDC,PKTSSR             ;TSSR INCORRECT AFTER WRITE DATA
                047760  104457                                                  TRAP    C$ERSOFT
                047762  000637                                                  .WORD   415
                047764  052336                                                  .WORD   T32WDC
                047766  011670                                                  .WORD   PKTSSR
   6586         047770                  80$:    CKLOOP                          ;LOOP IF SELECTED
                047770  104406                                                  TRAP    C$CLP1
   6587         047772  005723          TST     (R3)+                           ;BUMP RECORD SIZE COUNTER
   6588         047774  020327  000156          CMP     R3,#110.                ;AT 160 SIZE YET
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6589 050000  001341                        BNE     65$                 ;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$ERHRD
     050230  000643                                                     .WORD   419
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                050232  052111                                                          .WORD   T32TSA
                050234  011670                                                          .WORD   PKTSSR
   6641         050236                          290$:   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
```

```
                                        ;+
                                        ;
                                        ;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
                                        ;       RESULT 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 (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 SPACE RECORDS FORWARD WRITE
                                        ;                DATA RETRY
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
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
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
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
```

```
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     #B116,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-<.-TUV2A87>
051110                                  T32PACKET:                      ;COMMAND PACKET FOR TEST
051120  100004                                  .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
051122  051130                                  .WORD   T32DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
051124  000000                                  .WORD   0
051126  000012                                  .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
051130                                  T32DATA:                        ;CHARACTERISTICS DATA BLOCK
051130  051140                                  .WORD   T32BFR          ;ADDRESS OF MESSAGE BUFFER
051132  000000                                  .WORD   0
051134  000024                                  .WORD   20.             ;LENGTH OF MESSAGE BUFFER
051136  000000                                  .WORD   0
051140                                  T32BFR: .BLKW   25.             ;MESSAGE BUFFER
                                        ;
                                        ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                        ;
051222                                          .BLKB   10-<.-TUV2A87>
051230                                  T32PK2:
051230  100006                                  .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
051232  000000                                  .WORD   0               ;ADDRESS OF SELECT BLOCK DATA
051234  000000                                  .WORD   0
051236  000006                                  .WORD   6.              ;SIZE OF DATA PACKET
051240                                          .BLKB   10-<.-TUV2A87>
051250                                  T32PK3:
051250  100005                                  .WORD   100005          ;REREAD COMMAND, AND ACK
051252                                  T32RB:
051252  003072                          T32WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
051254  000000                                  .WORD   0
051256  000000                          T32SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES
051260                                  T32CMD:
051260  140410                                  .WORD   140410          ;SPACE RECORDS REVERSE
051262  141410                                  .WORD   141410          ;SKIP TAPE MARKS REVERSE
051264  140401                                  .WORD   140401          ;READ REVERSE
051266  141001                                  .WORD   141001          ;REREAD PREVIOUS (OPP=0)
051270  161401                                  .WORD   161401          ;REREAD NEXT (OPP=1)
051272  161001                                  .WORD   161001          ;REREAD PREVIOUS (OPP=1)
051274  141401                                  .WORD   141401          ;REREAD NEXT (OPP=0)
051276  140001                                  .WORD   140001          ;READ NEXT
051300  141410                                  .WORD   141410          ;SKIP TAPE MARKS REVERSE
051302  141010                                  .WORD   141010          ;SKIP RECORDS FORWARD
051304  141005                                  .WORD   141005          ;WRITE DATA RETRY
051306  177777                                  .WORD   177777          ;END OF DATA
                                        ;
051310  000000                          T32CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
051312  000000                          T32CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
051314  000000                          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
      052644  104401                                              L10053:
                                                                          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,$OFINIT      ;DO INITIALIZE ON CONTROLLER
052736  103433                          BCS     20$             ;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
```

```
                053016  104455                                                          TRAP    C$ERDF
                053020  000765                                                          .WORD   501
                053022  003550                                                          .WORD   SFIERR
                053024  011656                                                          .WORD   SFIMSG
 7086           053026                  20$:    CKLOOP                  ;LOOP IF SELECTED
                053026  104406                                                          TRAP    C$CLP1
 7087
 7088
 7089                                   ;
 7090                                   ;*******************************************************************
 7091                                   ;
 7092                                   ;       ISSUE A WRITE CHARACTERISTICS COMMAND TO CONTROLLER
 7093                                   ;
 7094                                   ;*******************************************************************
 7095                                   ;
 7096 053030    012704  055400                  MOV     #T34PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 7097 053034    004737  010322                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 7098 053040    103407                          BCS     30$                     ;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
```

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 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$ERHRD
     053646  000776                                                          .WORD   510
     053650  057213                                                          .WORD   T34SIM
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                053652  011670                                                          .WORD   PKTSSR
7293            053654                  130$:   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
```

```
 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 XSTATO
7454                            ;
7455                            ;*******************************************************************
7456                            ;
7457 054314 013701 055426               MOV     T34BFR+6,R1             ;PICK UP XSTO
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 (XSTO) 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
```

```
 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                                ;
```

```
 7550                                   ;*****************************************************************
 7551                                   ;
 7552                                   ;       THE EOT BIT SHOULD HAVE REMAINED SET
 7553                                   ;
 7554                                   ;*****************************************************************
 7555                                   ;
 7556 054674  013701  055426                    MOV     T34BFR+6,R1             ;PICK UP XSTO
 7557 054700  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 7558 054702  052702  000001                    BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 7559 054706  020102                            CMP     R1,R2                   ;WAS THE BIT ON
 7560 054710  001406                            BEQ     240$                    ;BR, IF EOT WAS FOUND
 7561 054712  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7565 054716                                    ERRHRD  ERRNO,T34ETZ,EXPREC     ;EOT BIT (XSTO) NOT SET
      054716  104456                                                            TRAP    C$ERHRD
      054720  001014                                                            .WORD   524
      054722  056555                                                            .WORD   T34ETZ
      054724  016334                                                            .WORD   EXPREC
 7566 054726                            240$:   CKLOOP                         ;LOOP IF SELECTED
      054726  104406                                                            TRAP    C$CLP1
 7567                                   ;
 7568                                   ;*****************************************************************
 7569                                   ;
 7570                                   ;       NOW ISSUE A SPACE RECORDS REVERSE FOR 5 RECORDS
 7571                                   ;
 7572                                   ;*****************************************************************
 7573                                   ;
 7574 054730  012737  140410  055530            MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD.
 7575 054736  012737  000005  055532            MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
 7576 054744  012704  055530                    MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7577 054750  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7578 054754  004737  017110                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7579 054760  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7580 054764  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 7581 054770  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 7582 054772  001406                            BEQ     250$                    ;BR, IT MIGHT BE END OF TAPE
 7583 054774  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7587 055000                                    ERRHRD  ERRNO,T34POS,PKTSSR     ;SPACE 5 RECORDS REVERSE COMMAND FAILED
      055000  104456                                                            TRAP    C$ERHRD
      055002  001015                                                            .WORD   525
      055004  055564                                                            .WORD   T34POS
      055006  011670                                                            .WORD   PKTSSR
 7588 055010                            250$:   CKLOOP                         ;LOOP IF SELECTED
      055010  104406                                                            TRAP    C$CLP1
 7589                                   ;
 7590                                   ;*****************************************************************
 7591                                   ;
 7592                                   ;       EOT SHOULD BE CLEAR AS WE ARE NOW IN FRONT OF EOT
 7593                                   ;
 7594                                   ;*****************************************************************
 7595                                   ;
 7596 055012  013701  055426                    MOV     T34BFR+6,R1             ;PICK UP XSTO
 7597 055016  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 7598 055020  042702  000001                    BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
 7599 055024  020102                            CMP     R1,R2                   ;WAS THE BIT ON
 7600 055026  001406                            BEQ     260$                    ;BR, IF EOT WAS FOUND
 7601 055030  004737  020070                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7605 055034                                    ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
```

```
                                                                                    TRAP    C$ERHRD
                                                                                    .WORD   526
                                                                                    .WORD   T34ETC
                                                                                    .WORD   EXPREC
7606                            260$:   CKLOOP                          ;LOOP IF SELECTED
                                                                                    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
     055116  104456                                                             TRAP    C$ERHRD
     055120  001017                                                             .WORD   527
     055122  055564                                                             .WORD   T34POS
     055124  011670                                                             .WORD   PKTSSR
7628 055126                     270$:   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.
     055146  104456                                                             TRAP    C$ERHRD
     055150  001020                                                             .WORD   528
     055152  056467                                                             .WORD   T34ETS
     055154  011670                                                             .WORD   PKTSSR
7645 055156                     280$:   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
```

```
7654 055174  012704  055530                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7655 055200  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7656 055204  012737  176750  055544        MOV     #65000.,T34DLY          ;SET UP DELAY COUNTER
7657 055212  004737  017110          285$: JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7658 055216  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7659 055222  032701  000200                BIT     #SSR,R1                 ;CHECK FOR SSR SET
7660 055226  001017                        BNE     286$                    ;BR, WHEN SSR IS SET
7661 055230                                DELAY   250                     ;WAIT ABOUT .25 SECONDS
     055230  012727  000250                                                        MOV     #250,(PC)+
     055234  000000                                                                .WORD   0
     055236  013727  002116                                                        MOV     L$DLY,(PC)+
     055242  000000                                                                .WORD   0
     055244  005367  177772                                                        DEC     -6(PC)
     055250  001375                                                                BNE     .-4
     055252  005367  177756                                                        DEC     -22(PC)
     055256  001367                                                                BNE     .-20
7662 055260  005337  055544                DEC     T34DLY                  ;BUMP COUNTER
7663 055264  001352                        BNE     285$                    ;BR, IF MORE TO COUNT
7664 055266  012702  100204          286$: MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED TAPE STATUS ALERT
7665 055272  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7666 055274  001407                        BEQ     300$                    ;BR, IT MIGHT BE END OF TAPE
7667 055276  005303                        DEC     R3                      ;DEC RECORD COUNTER
7668 055300  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7672 055304                                ERRHRD  ERRNO,T34WOL,PKTSSR     ;SKIP FILE MARK REVERSE CMD. FAILED
     055304  104456                                                                TRAP    C$ERHRD
     055306  001021                                                                .WORD   529
     055310  057540                                                                .WORD   T34WOL
     055312  011670                                                                .WORD   PKTSSR
7673                            ;*****************************************************************
7674                            ;
7675                            ;       THE BOT INDICATION BETTER BE SET
7676                            ;
7677                            ;*****************************************************************
7678 055314                    300$:   CKLOOP                          ;LOOP IF SELECTED
     055314  104406                                                                TRAP    C$CLP1
7679 055316  013701  055426                MOV     T34BFR+6,R1             ;PICK UP XSTO
7680 055322  010102                        MOV     R1,R2                   ;SET UP EXPECTED
7681 055324  052702  000002                BIS     #BIT1,R2                ;SET THE BOT BIT ON IN EXPECTED
7682 055330  020102                        CMP     R1,R2                   ;WAS THE BIT ON
7683 055332  001406                        BEQ     320$                    ;BR, IF BOT WAS FOUND
7684 055334  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7688 055340                                ERRHRD  ERRNO,T34BOT,EXPREC     ;BOT NOT SET AFTER SPACE CMD.
     055340  104456                                                                TRAP    C$ERHRD
     055342  001022                                                                .WORD   530
     055344  056120                                                                .WORD   T34BOT
     055346  016334                                                                .WORD   EXPREC
7689 055350                    320$:   CKLOOP                          ;LOOP IF SELECTED
     055350  104406                                                                TRAP    C$CLP1
7690 055352                    600$:   ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     055352                                                                 L10060:
     055352  104403                                                                TRAP    C$ESUB
7691 055354  004737  017344                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
7692 055360  103002                        BCC     163$                    ;BR, IF NO LOOP REQUIRED
7693 055362  000137  052706                JMP     T34LOOP                 ;EXECUTE AGAIN
7694 055366                    163$:   EXIT    TST                     ;ALL DONE THIS TEST
     055366  104432                                                                TRAP    C$EXIT
     055370  002404                                                                .WORD   L10057-.
```

```
 7696                                   ;+
 7697                                   ;LOCAL STORAGE FOR THIS TEST
 7698                                   ;-
 7700 055372                                    .BLKB   10-<.-TUV2A&7>
 7702 055400                            T34PACKET:                      ;COMMAND PACKET FOR TEST
 7703 055400  100004                            .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH ACK
 7704 055402  055410                            .WORD   T34DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
 7705 055404  000000                            .WORD   0
 7706 055406  000010                            .WORD   8.              ;STARTING VALUE OF BLOCK SIZE
 7707 055410                            T34DATA:                        ;CHARACTERISTICS DATA BLOCK
 7708 055410  055420                            .WORD   T34BFR          ;ADDRESS OF MESSAGE BUFFER
 7709 055412  000000                            .WORD   0
 7710 055414  000012                            .WORD   10.             ;LENGTH OF MESSAGE BUFFER
 7711 055416  000000                            .WORD   0
 7712 055420                            T34BFR: .BLKW   25.             ;MESSAGE BUFFER
 7713                                   ;
 7714                                   ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
 7715                                   ;
 7717 055502                                    .BLKB   10-<.-TUV2A&7>
 7719 055510                            T34PK2:
 7720 055510  100006                            .WORD   100006          ;WRITE SUB SYS MEM COMMAND, AND ACK
 7721 055512  055546                            .WORD   T34BF2          ;ADDRESS OF SELECT BLOCK DATA
 7722 055514  000000                            .WORD   0
 7723 055516  000006                            .WORD   6.              ;SIZE OF DATA PACKET
 7724
 7726 055520                                    .BLKB   10-<.-TUV2A&7>
 7728 055530                            T34PK3:
 7729 055530  100005                            .WORD   100005          ;WRITE COMMAND,  AND ACK
 7730 055532                            T34RB:
 7731 055532  000000                    T34WB:  .WORD   0               ;ADDRESS OF WRITE/READ BUFFER
 7732 055534  000000                            .WORD   0
 7733 055536  000000                    T34SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
 7734                                           .EVEN
 7735                                   ;
 7736 055540  000000                    T34RSZ: .WORD   0               ;LARGEST TAPE RECORD IN BYTES
 7737 055542  000000                    T34CNT: .WORD   0               ;TAPE RECORD COUNTER
 7738 055544  000000                    T34DLY: .WORD   0               ;DELAY COUNTER
 7739                                   ;
 7740                                   ;
 7741 055546                            T34BF2:
 7742 055546     010                    T34BS0: .BYTE   10              ;BSEL0 AREA
 7743 055547     200                    T34BS1: .BYTE   200             ;BSEL1 AREA
 7744 055550  000000                    T34S2:  .WORD   0               ;SEL 2 AREA
 7745 055552  000000                    T34S3:  .WORD   0               ;DATA AREA
 7746                                   ;
 7747                                   ;
 7748                                           .EVEN
 7749                                   ;TAPE MOTION PACKET COMMAND VALUES
 7750
 7751 055554  100005                    T34WD:  .WORD   100005          ;WRITE DATA (NEXT)
 7752 055556  100405                    T34WDR: .WORD   100405          ;WRITE DATA RETRY
 7753 055560  102005                    T34CON: .WORD   102005          ;WRITE CONTINOUS
 7754 055562  177777                            .WORD   177777          ;END OF DATA
 7755
 7756
```

```
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     (?1)+                   ;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
      057774  104401                                                              L10057:
                                                                                        TRAP    CSETST
```

```
 7836                                          .SBTTL  TEST  6: FUNCTION TIMING
 7837                                  ;+
 7838                                  ;
 7839                                  ;THIS TEST VERIFIES THAT THE TAPE TRANSPORT SEEMS TO BE WRITING
 7840                                  ;RECORDS, GAPS, AND EXTENDED GAPS OF THE PROPER LENGTH. BOTH LOW
 7841                                  ;AND HIGH SPEED MODES ARE TESTED. IT IS ALSO VERIFIED THAT A
 7842                                  ;SPACE RECORDS COMMAND WITH A RECORD COUNT OF 80 OR MORE, AND A
 7843                                  ;SKIP TAPE MARKS COMMAND WITH A COUNT OF 2 OF MORE, OPERATE THE
 7844                                  ;TAPE IN HIGH-SPEED MODE. THIS TEST CAN ONLY BE RUN IF A
 7845                                  ;REAL-TIME CLOCK IS AVAILIABLE ON THE SYSTEM. THE TEST OPERATES BY
 7846                                  ;TIMING VARIOUS TAPE-MOTION OPERATIONS, USING A NUMBER OF
 7847                                  ;DIFFERENT TEST RECORD LENGTHS.
 7848                                  ;
 7849                                  ;
 7850                                  ;-
 7851 057776                                  BGNTST
      057776                                                                                  T6::
 7852 057776  005037  002170                  CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
 7853 060002  005037  003100                  CLR     KTFLG                   ;HOLD OFF KT11
 7854 060006  012737  005672  002146          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
 7855 060014  004737  020234                  JSR     PC,KTOFF                        ;TURN KT OFF
 7860 060020  012700  064223                  MOV     #TST37ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
 7861 060024  004737  017376                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
 7862 060030  012737  000002  002164          MOV     #2,LOOPCNT              ;PERFORM 2 ITERATIONS
 7863 060036  005037  061266                  CLR     T37CNT                  ;CLEAR TAPE RECORD COUNTER
 7864                                  ;+
 7865                                  ;
 7866                                  ;TEST 6, SUBTEST 1
 7867                                  ;
 7868                                  ;
 7869                                  ;
 7870                                  ;
 7871                                  ;-
 7872
 7873 060042                          T37LOOP:
```

```
 7875 060042                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      060042                                                                                  T6.1:
      060042  104402                                                                              TRAP    C$BSUB
 7876 060044  005037  002172                CLR     INTRECV                 ;INTERRUPT INDICATOR
 7877 060050  005037  061266                CLR     T37LNT                  ;TIMER FOR WRITE DATA SPACING
 7878 060054  005037  061270                CLR     T37CNU                  ;TIMER FOR WRITE DATA RETRY SPACING
 7879 060060  004737  064244                JSR     PC,T37REST              ;SET COMMAND PACKET
 7880 060064  004737  064336                JSR     PC,T37RT2               ;SET UP OTHER COMMAND PACKET
 7881 060070  004737  064400                JSR     PC,T37RT3               ;SET UP OTHER COMMAND PACKET
 7882 060074  012737  176750  061272        MOV     #65000.,T37DLY          ;SET UP DELAY COUNTER
 7883 060102  004737  016634          10$:  JSR     PC,SOFINIT              ;DO INITIALIZE OF 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 XSIO
```

```
 7917 060254  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 7918 060256  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 7919 060262  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 7920 060264  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 7921 060266  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7925 060272                                ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      060272  104456                                                        TRAP    C$ERHRD
      060274  001134                                                        .WORD   604
      060276  062141                                                        .WORD   T37BOT
      060300  016334                                                        .WORD   EXPREC
 7926 060302                        40$:    CKLOOP                          ;LOOP IF SELECTED
      060302  104406                                                        TRAP    C$CLP1
 7927 060304  012703  000144                MOV     #100.,R3                ;NUMBER OF RECORDS TO BE WRITTEN
 7928 060310  013737  003072  061242        MOV     FREE,T37WB              ;STARTING WRITE BUFFER ADDRESS
 7929 060316  012737  140005  061240  65$:  MOV     #140005,T37PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 7930 060324  012704  061240                MOV     #T37PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 7931 060330  012737  001130  061246        MOV     #600.,T37SZ             ;SET UP RECORD SIZE IN PACKET
 7932 060336  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7933 060342  004737  017110                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7934 060346  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7935 060352  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 7936 060356  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 7937 060360  001406                        BEQ     70$                     ;BR, IF OK
 7938 060362  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7942                                                                       ;SOFT ERROR, DON'T CARE ABOUT WRITE
 7943                                                                       ;COMMAND'S RESULTS - CHECKING THE
 7944                                                                       ;THE FUNCTION TIMING
 7945 060366                                ERRSOFT ERRNO,T37WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      060366  104457                                                        TRAP    C$ERSOF1
      060370  001135                                                        .WORD   605
      060372  063001                                                        .WORD   T37WDC
      060374  011670                                                        .WORD   PKTSSR
 7946 060376                        70$:    CKLOOP                          ;LOOP IF SELECTED
      060376  104406                                                        TRAP    C$CLP1
 7947 060400  005303                        DEC     R3                      ;DEC RECORD COUNTER
 7948 060402  001345                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 7949 060404  004737  010424                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 7950 060410  103411                        BCS     130$                    ;BR, IF NO PROBLEM
 7951 060412  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7952 060416  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 7953 060420  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7957 060424                                ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
      060424  104456                                                        TRAP    C$ERHRD
      060426  001136                                                        .WORD   606
      060430  062445                                                        .WORD   T37RWN
      060432  011670                                                        .WORD   PKTSSR
 7958 060434                        130$:   CKLOOP                          ;LOOP IF SELECTED
      060434  104406                                                        TRAP    C$CLP1
 7959 060436  013701  061136                MOV     T37BFR+6,R1             ;PICK UP XSTO
 7960 060442  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 7961 060444  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 7962 060450  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 7963 060452  001406                        BEQ     140$                    ;BR, IF EQUAL (OK)
 7964 060454  004737  020070                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7968 060460                                ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      060460  104456                                                        TRAP    C$ERHRD
      060462  001137                                                        .WORD   607
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                060464  062141                                                          .WORD   T37BOT
                060466  016334                                                          .WORD   EXPREC
 7969           060470                          140$:   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$CLP1
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 8009 060700  012704  061240                MOV     #T37PK3,R4          ;SET UP PACKET ADDRESS
 8010 060704  012737  000121  061242        MOV     #81.,T37RB          ;SET UP RECORDS TO SPACE OVER
 8011 060712  012737  140010  061240        MOV     #140010,T37PK3      ;ACK,CVC=1,SPACE FORWARD COMMAND
 8012 060720  010465  177776        250$:   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-.
```

```
                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
061102                                  .BLKB   10-<.-TUV2A&7>
061110                          T37PACKET:                      ;COMMAND PACKET FOR TEST
061110  100004                          .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
061112  061120                          .WORD   T37DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
061114  000000                          .WORD   0
061116  000012                          .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
061120                          T37DATA:                        ;CHARACTERISTICS DATA BLOCK
061120  061130                          .WORD   T37BFR          ;ADDRESS OF MESSAGE BUFFER
061122  000000                          .WORD   0
061124  000024                          .WORD   20.             ;LENGTH OF MESSAGE BUFFER
061126  000000                          .WORD   0
061130                          T37BFR: .BLKW   25.             ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
061212                                  .BLKB   10-<.-TUV2A&7>
061220                          T37PK2:
061220  100006                          .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
061222  061250                          .WORD   T37BF2          ;ADDRESS OF SELECT BLOCK DATA
061224  000000                          .WORD   0
061226  000006                          .WORD   6.              ;SIZE OF DATA PACKET

061230                                  .BLKB   10-<.-TUV2A&7>
061240                          T37PK3:
061240  100005                          .WORD   100005          ;REREAD COMMAND, AND ACK
061242                          T37RB:
061242  003072                  T37WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
061244  000000                          .WORD   0
061246  000000                  T37SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
                                        .EVEN
                                ;
                                ;
                                ;
061250                          T37BF2:
061250     010                  T37BS0: .BYTE   10              ;BSEL0 AREA
061251     200                  T37BS1: .BYTE   200             ;BSEL1 AREA
061252  000000                  T37S2:  .WORD   0               ;SEL 2 AREA
061254  000000                  T37S3:  .WORD   0               ;DATA AREA
                                ;
                                ;
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

061256  100205                  T37RN:  .WORD   100205          ;REREAD DATA (NEXT)
061260  100605                  T37WDR: .WORD   100605          ;REREAD DATA RETRY
061262  102205                  T37CON: .WORD   102205          ;WRITE CONTINOUS
061264  177777                          .WORD   177777          ;END OF DATA

                                ;
061266  000000                  T37CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
061270  000000                  T37CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
061272  000000                  T37DLY: .WORD   0               ;DELAY COUNTER
```

```
8109
8110                                    ;+
8111                                    ;LOCAL TEXT MESSAGES FOR TEST
8112                                    ;-
8113
8114
8115 061274     124     141     160    T37WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
8116 061362     124     123     123    T37RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
8117 061431     122     105     122    T37RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
8118 061526     120     117     123    T37SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
8119 061610     122     111     102    T37LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
8120 061660     124     123     123    T37WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
8121 061735     111     154     154    T37LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
8122 062016     122     105     122    T37SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
8123 062052     124     123     123    T37WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command,At BOT'
8124 062141     124     141     160    T37BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
8125 062234     127     122     111    T37TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
8126 062311     122     105     122    T37EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
8127 062370     124     123     123    T37TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
8128 062445     122     145     167    T37RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
8129 062514     122     101     115    T37RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
8130 062567     124     123     123    T37AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
8131 062636     104     162     151    T37OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
8132 062711     124     123     123    T37WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
8133 063001     124     123     123    T37WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
8134 063054     103     126     103    T37VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
8135 063127     124     123     102    T37BA:  .ASCIZ  'TSBA Not Correct After REHEAD DATA Command'
8136 063202     127     122     111    T37WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
8137 063271     122     145     141    T37LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
8138 063353     122     145     141    T37LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
8139 063435     122     145     163    T37PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
8140 063523     122     145     141    T37TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
8141 063611     127     122     111    T37NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
8142 063707     124     123     123    T37SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
8143 063764     124     123     123    T37TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
8144 064046     124     123     123    T37WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
8145 064126     104     141     164    T37DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
8146 064223     106     165     156    TST37ID:        .ASCIZ  'Function Timing'
8147                            .EVEN
8148                                    ;+
8149                                    ;
8150                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
8151                                    ;WRITE SUBSYSTEM MEMORY COMMAND
8152                                    ;
8153                                    ;-
8154
8155 064244                             T37REST:
8156 064244                                     SAVREG                          ;SAVE THE REGISTERS
8157 064250     012701  061110                    MOV     #T37PACKET,R1           ;START OF THE PACKET
8158 064254     012721  100004                    MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
8159 064260     012721  061120                    MOV     #T37DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
8160 064264     005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
8161 064266     012721  000012                    MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
8162 064272     012721  061130                    MOV     #T37BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
8163 064276     005021                            CLR     (R1)+
8164 064300     012721  000024                    MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
8165 064304     005021                            CLR     (R1)+
```

```
 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
```

```
   9
   9307
   9308                                 ;++
   9309                                 ; THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
   9310                                 ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
   9311                                 ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
   9312                                 ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
   9313                                 ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
   9314                                 ; WITH THE OPERATOR.
   9315                                 ;--
   9316 071362                                  BGNSFT
        071362  000006                         .WORD L10064-L$SOFT/2
        071364                          L$SOFT::
   9317 071364                                  GPRML   SPM1,0,-1,YES                   ;GET RAM DUMP FLAG
        071364  000130                         .WORD   T$CODE
        071366  071400                         .WORD   SPM1
        071370  177777                         .WORD   -1
   9318 071372                                  GPRML   SPM4,2,-1,YES                   ; GET ITERATION CONTROL.
        071372  001130                         .WORD   T$CODE
        071374  071437                         .WORD   SPM4
        071376  177777                         .WORD   -1
   9319                                 ;       GPRMD   SPM6,4,D,7777,0,7777,YES        ; GET LOCAL ERROR LIMIT
   9320                                 ;       GPRMD   SPM7,6,D,7777,0,7777,YES        ; GET GLOBAL ERROR LIMIT
   9321 071400                                  ENDSFT
                                                .EVEN
        071400                          L10064:
   9322 071400     105     116     101  SPM1:   .ASCIZ  'ENABLE M7454 RAM DUMP ON ERROR'
   9323 071437     111     116     110  SPM4:   .ASCIZ  'INHIBIT ITERATIONS     '
   9324 071467     120     105     122  SPM6:   .ASCIZ  'PER TEST ERROR LIMIT   '
   9325 071517     120     105     122  SPM7:   .ASCIZ  'PER UNIT ERROR LIMIT   '
   9326                                         .EVEN
   9327                                         .SBTTL  PATCH AREA
   9328                                 ;+
   9329                                 ;DISPATCH TABLE
   9330                                 ;
   9331                                 ; *** MOVE TO FRONT OF PROGRAM FOR RELEASE ***
   9332                                 ;-
   9333 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
   9334
   9335                                 ; FINALLY A GENEROUS PATCH AREA.
   9336                                 ;
   9337                                 ; AND AN ADJUSTMENT TO ACCOUNT FOR THE "LASTAD BIT7" HACK
   9338                                 ; DESCRIBED IN "SUPPRG.MEM" (FOR REV C).
   9339 071566                          PATCH::
   9340
```

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CZTUZAO TU80 FRONT END PRT D    MACRO M1200  29-MAR-83 13:43  PAGE 138
PATCH AREA

 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$:    MOV     (R5)+,R4                ;GET MEMORY CONTENTS
 9364 071670  052737  000001  177572            BIS     #1,@#SR0                ;ENABLE MEMORY MANAGEMENT
 9365 071676  C10421                            MOV     R4,(R1)+                ;PUT INTO UPPER MEMORY
 9366 071700  042737  000001  177572            BIC     #1,@#SR0                ;TURN OFF MEMORY MANGEMENT
 9367 071706  020127  157776                    CMP     R1,#157776              ;END OF MEMORY PAGE YET ?
 9368 071712  101765                            BLOS    10$                     ;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-?2K 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/
 9398                                           .EVEN
```

```
 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           PR105
 9462 072344                                ENDPTAB
      072344                        L10067:
 9463 072344                                ENDSETUP
 9464
 9465         000001                        .END
```

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 140-1
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    INCERR  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 = 0000
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
```

CZTUZA0 TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 140-3
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$NEST= 000000
PRAMPK  013620          P.GETS= 000017          SFIERR  003550          TIMEXP  016412 G        T$NSU = 000000
PRBEXP  016330          P.IE  = 000200          SFIMSG  011656 G        TIMSGO  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
PRIASC  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
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CZTUZA0 TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 140-4
SYMBOL TABLE

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

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CZTUZA0 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.IIT= 000040          XST4  = 000016 G        XXCOMM  003070 G        X3.MDE= 177400
T37WSS  063202          WC.ISR= 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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