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IDENTIFICATION

PRODUCT ID: AC-T334A-MC

PRODUCT TITLE: CZTUYAO TU80 FRONT-END PRT C

PRODUCT DATE: 23 - MARCH - 1983

MAINTAINER: T..PE DIAGNOSTIC ENGINEERING

AUTHOR: DICE SYSTEMS, INC.

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.

HARDWARE, SOFTWARE REQUIREMENTS AND PREREQUISITES

2.0 HARDWARE, SOFTWARE REQUIREMENTS AND PREREQUISITES

2.1 HARDWARE REQUIREMENTS

PDP-11/LSI 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 8 TU80 CONTROLLERS PER PDP-11 UP TO 1 DRIVE PER CONTROLLER

2.3 SOFTWARE REQUIREMENTS

PDP-11 DIAGNOSTIC SUPERVISOR (HSAADO.SYS)
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 "
THIS IS XXDP+. TYPE "H" OR "H/L" FOR DETAILS
R CZTUYA0
CZTUYABINDRS LOADED
DIAG. RUN-TIME SERVICES REV D. APR 79
CZTUY-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 = 172520, 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 CU132 CONTROLLERS
                PRESENT TO BE TESTED>

UNIT 0

DEVICE ADDRESS  (O) 172520 ? <ENTER THE ADDRESS OF THE
                              TSBA/TSDB REGISTER>

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

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

```
TST: 001 SPACE RECORDS TEST
TST: 002 REREADS TEST
TST: 003 WRITE DATA RETRY TEST
TST: 004 WRITE TAPE MARK 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
CZTUY 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

```
CZTUY 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

```
CZTUY 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
```

PROGRAM RUN TIMES

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 (LSI) 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

THE TIMES REQUIRED TO RUN TESTS 1 THROUGH 8 IN ONE COMMAND:

Q.V.	7 MINUTES
DEFAULT	31 MINUTES

7.0 TEST SUMMARIES

7.1 TEST 1 - SPACE RECORDS TEST

```
**************************************************************************
* 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 SPACE RECORDS FORWARD AND SPACE RECORDS REVERSE POSITION COMMANDS OPERATE PROPERLY WHEN SPACING OVER NORMAL DATA RECORDS. OPERATION WHEN SPACING OVER TAPE MARKS IS VERIFIED IN A SUBSEQUENT TEST. THE BASIC WRITE DATA TEST SHOULD HAVE BEEN RUN SUCCESSFULLY FOR THIS TEST TO PRODUCE MEANINGFUL RESULTS. THIS TEST CONSISTS OF A SERIES OF SUBTESTS. IN EACH OF THE SUBTESTS, THE TAPE IS ENTIRELY WRITTEN WITH RECORDS OF VARYING SIZES AND DATA CONTENT; THE FIRST 4 BYTES OF EACH RECORD INDICATE THAT RECORD'S RELATIVE POSITION ON TAPE. AFTER EACH SPACING OPERATION, THE TAPE POSITION IS VERIFIED BY READING THE NEXT OR PREVIOUS RECORD AND COMPARING THE POSITION DATA WITH THE EXPECTED RESULT.

7.1.1 TEST 1, SUBTEST 1;-

THIS SUBTEST VERIFIES THAT A SPACE RECORDS FORWARD COMMAND WITH THE CLEAR VOLUME CHECK (CVC) BIT CLEAR IS REJECTED IF THE VOLUME CHECK FLAG (VCK) IS SET.

7.1.2 TEST 1, SUBTEST 2:-

THIS SUBETST VERIFIES THAT A SPACE RECORDS REVERSE COMMAND WITH THE CLEAR VOLUME CHECK (CVC) BIT CLEAR IS REJECTED IF THE VOLUME CHECK (VCK) FLAG IS SET.

7.1.3 TEST 1, SUBTEST 3:-

THIS SUBTEST VERIFIES THAT SPACE RECORDS FORWARD CAN SPACE ONE RECORD OFF BOT AND CAUSE BOT STATUS TO BE CLEARED.

7.1.4 TEST 1, SUBTEST 4:-

THIS SUBTEST VERIFIES THAT SPACE RECORDS REVERSE CAN SPACE BACK OVER THE FIRST RECORD ON TAPE.

7.1.5 TEST 1, SUBTEST 5:-

THIS SUBTEST VERIFIES THAT SPACE RECORDS FORWARD CAN SPACE A MULTIPLE NUMBER OF RECORDS (2 THROUGH 64K, OR THE MAXIMUM NUMBER OF RECORDS WRITTEN ON THE TAPE, WHICHEVER IS LESS.).

7.1.6 TEST 1, SUBTEST 6:-

THIS SUBTEST VERIFIES THAT SPACE RECORDS REVERSE CAN SPACE A MULTIPLE NUMBER OF RECORDS (2 THROUGH 64K, OR THE MAXIMUM NUMBER OF RECORDS WRITTEN ON THE TAPE, WHICH EVER IS LESS).

7.1.7 TEST 1, SUBTEST 7:-

THIS SUBTEST VERIFIES THAT SPACE RECORDS REVERSE ISSUED WHILE TAPE IS AT BOT RESULTS IN FUNCTION REJECT TERMINATION WITH THE NON-EXECUTABLE FUNCTION (NEF) ERROR BIT SET.

7.1.8 TEST 1, SUBTEST 8:-

THIS SUBTEST VERIFIES THAT A SPACE RECORDS REVERSE COMMAND THAT CAUSES THE TAPE TO RUN INTO BOT (WITH THE TAPE NOT INITIALLY AT BOT) CAUSES A TAPE STATUS ALERT TERMINATION AND SETS THE REVERSE INTO BOT (RIB) STATUS BIT.

7.2 TEST 2 - REREADS TEST

THIS TEST VERIFIES THAT THE REREAD PREVIOUS AND REREAD NEXT COMMANDS OPERATE PROPERLY. VARIOUS COMBINATIONS OF ODD AND EVEN DATA BUFFER BOUNDRIES, RECORD SIZES (UP TO 64K BYTES IF MEMORY SPACE IS AVAILIABLE), AND BYTE-SWAP (SWP) AND OPPOSITE (OPP) CONRTOL ARE USED. ALSO TESTED ARE PROPER TERMINATIONS ON EXCEPTIONAL OR ERROR CONDITIONS: RECORD LENGTH LONG, RECORD LENGTH SHORT, READ REVERSE AT BOT, ILLEGAL DATA BUFFER ADDRESSES, AND DATA BUFFERS IN NONEXISTENT MEMORY.

7.2.1 TEST 2, SUBTEST 1;-

THIS SUBTEST VERIFIES THAT THE REREAD PREVIOUS COMMAND WITH OPP=0 AND SWB=0 OPERATES PROPERLY. THE TAPE IS FIRST REWOUND AND THEN WRITTEN WITH A SERIES OF TAPE RECORDS VARYING IN LENGTH AND DATA CONTENT. THE TAPE IS THEN REWOUND AGAIN. FOR EACH RECORD THE TAPE IS SPACED FORWARD ONE RECORD AND THE REREAD PREVIOUS COMMAND IS ISSUED. RESULTS (STATUS, DATA, ETC.) ARE VERIFIED. THE BYTE COUNT ON EACH REREAD PREVIOUS COMMAND IS SET TO THE LENGTH OF THE EXPECTED RECORD, SO NO EXCEPTIONAL CONDITIONS SHOULD OCCUR.

7.2.2 TEST 2, SUBTEST 2:-

THIS SUBTEST VERIFIES THAT THE REREAD PREVIOUS COMMAND WITH OPP=0 AND SWB=1 OPERATES PROPERLY. THE TEST SEQUENCE IS THE SAME AS THAT USED IN SUBTEST 1, BUT IT IS VERIFIED THAT DATA STORES BY THE COMMAND CONTAINS SWAPPED BYTES.

7.2.3 TEST 2, SUBTEST 3:-

THIS SUBTEST VERIFIES THAT THE REREAD PREVIOUS COMMAND WITH OPP=1 (READ REVERSE, SPACE FORWARD) AND SWB=0 OPERATES PROPERLY. THE TAPE IS FIRST REWOUND, AND THEN WRITTEN WITH A SERIES OF TEST RECORDS OF VARYING LENGTH AND DATA CONTENT; THE FIRST FOUR BYTES OF EACH RECORD CONTAIN ITS RECORD NUMBER (INDICATING POSITION ON TAPE). THE TAPE IS THEN REWOUND AGAIN. FOR EACH TEST RECORD THE FOLLOWING SEQUENCE IS EXECUTED:

1. THE REREAD PREVIOUS COMMAND WITH OPP=1 IS ISSUED AND THE RESULTS ARE CHECKED.
2. A READ FORWARD COMMAND IS THEN ISSUED AND THE DATA IS CHECKED TO VERIFY THAT THE TAPE WAS POSITIONED PROPERLY AFTER THE REREAD PREVIOUS COMMAND (E.G. THE TAPE SHOULD HAVE BEEN LEFT POSITIONED AT THE START OF THE TEST RECORD.). THE READ FORWARD COMMAND LEAVES THE TAPE POSITIONED PROPERLY AT THE START OF THE NEXT RECORD.

THE BYTE COUNT ON EACH REREAD PREVIOUS COMMAND IS SET TO THE LENGTH OF THE EXPECTED RECORD, SO NO EXCEPTIONAL CONDITIONS SHOULD OCCUR.

7.2.4 TEST 2, SUBTEST 4:-

THIS SUBTEST VERIFIES THAT THE REREAD PREVIOUS COMMAND WITH OPP=1 AND SWB=1 OPERATES PROPERLY. THE TEST SEQUENCE IS THE SAME AS THAT USED IN SUBTEST 3, BUT IT IS VERIFIED THAT DATA STORED BY THE COMMAND CONATINS SWAPPED BYTES.

7.2.5 TEST 2, SUBTEST 5:-

THIS SUBTEST VERIFIES THAT A REREAD PREVIOUS COMMAND READING A RECORD LONGER THAN THE SPECIFIED BYTE COUNT CAUSES TAPE STATUS ALERT TERMINATION WITH THE RECORD LENGTH LONG (RLL) BIT SET. RESULTS ARE VERIFIED FOR BOTH STATES OF OPP (0 AND 1).

7.2.6 TEST 2, SUBTEST 6:-

THIS SUBTEST VERIFIES THAT A REREAD PREVIOUS COMMAND READING A RECORD SHORTER THAN THE SPECIFIED BYTE COUNT CAUSES TAPE STATUS ALERT TERMINATION WITH THE RECORD LENGTH SHORT (RLS) BIT SET. IT IS VERIFIED THAT THE RESIDUAL BYTE COUNTER (RBPCR) IN THE MESSAGE BUFFER CONTAINS THE APPROPRIATE NONZERO VALUE (E.G THE DIFFERENCE BETWEEN THE ORIGINAL BYTE COUNT AND THE ACTUAL RECORD LENGTH). RESULTS ARE VERIFIED FOR BOTH STATES OF OPP (0 AND 1).

7.2.7 TEST 2, SUBTEST 7:-

THIS SUBTEST VERIFIES THAT THE REREAD NEXT COMMAND WITH OPP=0 AND SWB=0 OPERATES PROPERLY. THE TAPE IS FIRST REWOUND AND THEN

WRITTEN WITH A SERIES OF TEST RECORDS OF VARYING LENGTH AND DATA CONTENT. THE TAPE IS THEN REWOUND AGAIN. FOR EACH TEST RECORD THE TAPE IS SPACED FORWARD ONE RECORD AND A REREAD NEXT COMMAND IS ISSUED. RESULTS (STATUS, DATA, ETC.) IS VERIFIED. THE BYTE COUNT ON EACH REREAD NEXT COMMAND IS SET TO THE LENGTH OF THE EXPECTED RECORD, SO NO EXCEPTIONAL CONDITIONS SHOULD OCCUR.

7.2.8 TEST 2, SUBTEST 8:-

THIS SUBTEST VERIFIES THAT THE REREAD NEXT COMMAND WITH OPP=0 AND SWB=1 OPERATES PROPERLY. THE TEST SEQUENCE IS THE SAME AS THAT USED IN SUBTEST 1, BUT IT IS VERIFIED THAT DATA STORED BY THE COMMAND CONTAINS SWAPPED BYTES.

7.2.9 TEST 2, SUBTEST 9:-

THIS SUBTEST VERIFIES THAT THE REREAD NEXT COMMAND WITH OPP=1 (READ FORWARD, SPACE REVERSE) AND SWB=0 OPERATES PROPERLY. THE TAPE IS FIRST REWOUND AND THEN WRITTEN WITH A SERIES OF TAPE RECORDS VARYING IN LENGTH AND DATA CONTENT; THE FIRST FOUR BYTES OF EACH RECORD CONTAIN ITS RECORD NUMBER (INDICATING POSITION ON TAPE). THE TAPE IS THEN REWOUND AGAIN. FOR EACH TEST RECORD THE FOLLOWING SEQUENCE IS EXECUTED:

1. THE REREAD NEXT COMMAND WITH OPP=1 IS ISSUED AND THE RESULT IS CHECKED.
2. A READ FORWARD COMMAND IS THEN ISSUED AND THE DATA IS CHECKED TO VERIFY THAT THE TAPE WAS POSITIONED PROPERLY AFTER THE REREAD NEXT COMMAND (E.G. THE TAPE SHOULD HAVE BEEN LEFT POSITIONED AT THE START OF THE TEST RECORD). THE READ FORWARD COMMAND LEAVES THE TAPE POSITIONED PROPERLY AT THE START OF THE NEXT TEST RECORD.

THE BYTE COUNT ON EACH REREAD NEXT COMMAND IS SET TO THE LENGTH OF THE EXPECTED RECORD, SO NO EXCEPTIONAL CONDITIONS SHOULD OCCUR.

7.2.10 TEST 2, SUBTEST 10:-

THIS SUBTEST VERIFIES THAT THE REREAD NEXT COMMAND WITH OPP=1 AND SWB=1 OPERATES PROPERLY. THE TEST SEQUENCE IS THE SAME AS THAT USED IN SUBTEST 3, BUT IT IS VERIFIED THAT DATA STORED BY THE COMMAND CONTAINS SWAPPED BYTES.

7.2.11 TEST 2, SUBTEST 11;-

THIS SUBTEST VERIFIES THAT A REREAD NEXT COMMAND READING A RECORD LONGER THAN THE SPECIFIED BYTE COUNT CAUSES TAPE STATUS ALERT TERMINATION WITH THE RECORD LENGTH LONG (RLL) BIT SET. RESULTS ARE VERIFIED FOR BOTH STATES OF OPP (1 AND 0).

7.2.12 TEST 2, SUBTEST 12:-

THIS SUBTEST VERIFIES THAT A REREAD NEXT COMMAND READING A RECORD SHORTER THAN THE SPECIFIED BYTE COUNT CAUSES TAPE STATUS ALERT TERMINATION WITH THE RECORD LENGTH SHORT (RLS) BIT SET. IT IS VERIFIED THAT THE RESIDUAL BYTE COUNTER IN THE MESSAGE BUFFER CONTAINS THE PROPER NONZERO MESSAGE (E.G. THE DIFFERENCE BETWEEN THE THE ORIGINAL BYTE COUNT AND THE ACTUAL RECORD LENGTH). RESULTS ARE VERIFIED FOR BOTH STATES OF OPP (0 AND 1).

7.2.13 TEST 2, SUBTEST 13:-

THIS SUBTEST VERIFIES THAT A DATA BUFFER ADDRESS REFERENCING NONEXISTANT MEMORY RECOVERABLE ERROR TERMINATION (TC=4 OR 5) WITH NXM=1 AND THAT THE TAPE IS ULTIMATELY POSITIONED PROPERLY. ALL COMBINATIONS OF REREAD PREVIOUS/NEXT AND OPP=0/1 ARE TESTED.

7.2.14 TEST 2, SUBTEST 14:-

THIS SUBTEST VERIFIES THAT THE REREAD PREVIOUS WITH OPP=0 (SPACE REVERSE, READ FORWARD) AND REREAD PREVIOUS WITH OPP=1 (READ REVERSE SPACE FORWARD) ISSUED WHEN THE TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT TERMINATION WITH THE NONEXECUTABLE FUNCTION (NEF) ERROR BIT SET.

7.2.15 TEST 2, SUBTEST 15:-

THIS SUBTEST VERIFIES THAT THE REREAD PREVIOUS WITH OPP=1 (SPACE REVERSE, READ FORWARD) AND REREAD PREVIOUS WITH OPP=0 (READ REVERSE, SPACE FORWARD) ISSUED WHEN THE TAPE 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 - WRITE DATA RETRY TEST

```
**************************************************************************
* 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 WRITE DATA RETRY COMMAND (SPACE REVERSE, ERASE, WRITE DATA). THE TEST CONSISTS OF THE FOLLOWING FIVE SUBTESTS.

7.3.1 TEST 3, SUBTEST 1;-

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

7.3.2 TEST 3, SUBTEST 2:-

THIS SUBTEST VERIFIES THAT A WRITE DATA RETRY COMMAND ISSUED WHILE THE TAPE IS POSITIONED BEFORE THE FIRST RECORD ON TAPE (BUT NOT AT BOT) CAUSES TAPE STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS ERROR BIT SET.

7.3.3 TEST 3, SUBTEST 3:-

THIS SUBTEST VERIFIES THAT A WRITE DATA RETRY COMMAND WITH SWB=0 TERMINATES PROPERLY AND WRITES CORRECT DATA ON TAPE (THE WRITTEN RECORD IS READ AND CHECKED). VARIOUS BYTE COUNTS AND DATA PATTERNS ARE USED.

7.3.4 TEST 3, SUBTEST 4:-

THIS SUBTEST VERIFIES THAT A WRITE DATA RETRY COMMAND WITH SWB=1 TERMINATES PROPERLY AND WRITES CORRECT DATA ON TAPE (THE WRITTEN RECORD IS READ AND CHECKED). VARIOUS BYTE COUNTS AND DATA PATTERNS ARE USED.

7.3.5 TEST 3, SUBTEST 5:-

THIS SUBTEST VERIFIES THAT A WRITE DATA RETRY COMMAND IS PERFORMING THE ERASE PART OF THE OPERATION BY PERFORMING THE FOLLOWING SERIES OF STEPS:

1. THE TAPE IS REWOUND AND A SERIES OF RECORDS ARE WRITTEN WITH THE NORMAL WRITE DATA COMMAND. THIS SHOULD RESULT IN RECORDS SEPERATED BY THE STANDARD INTERRECORD GAP.

2. A PROGRAM TIMING VALUE IS CALIBRATED BY REWINDING THE TAPE AND THEN CONTINUING THE NUMBER OF CYCLES THROUGH A PROGRAMMED LOOP REQUIRED TO SPACE OVER THE SERIES OF RECORDS WRITTEN IN THE PREVIOUS STEP.

3. THE TAPE IS AGAIN REWOUND AND THE SAME SERIES OF RECORDS WRITTEN AGAIN, THIS TIME USING THE WRITE DATA RETRY COMMAND. THIS HOULD RESULT IN RECORDS SEPERATED BY A A LONG INTERRECORD GAP.

4. THE TAPE IS AGAIN REWOUND, THE SPACING COMMAND ISSUED, AND THE NUMBER OF TIMING LOOP CYCLES COUNTED TO COMPLETE THE OPERATION.

5. THE TWO LOOPS ARE COMPARED, CHECKING TO SEE THAT THEY DIFFER BY A SIGNIFICANT AMOUNT.

7.4 TEST 4 - WRITE/READ TAPE MARK

****
* 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 THAT THE WRITE TAPE MARK COMMAND OPERATES PROPERLY. IT IS VERIFIED THAT THE TAPE MARK IS WRITTEN ONTO TAPE BY CHECKING THAT THE READ AND SPACE RECORDS COMMANDS DETECT THE TAPE MARK. IN ADDITION, SINCE WRITE TAPE MARK IS THE FIRST SUBCOMMAND UNDER THE FORMAT COMMAND BEING TESTED, IT IS VERIFIED THAT THE CLEAR VOLUME CHECK (CVC) BIT OPERATES PROPERLY AND THAT FORMAT COMMANDS WITH ILLEGAL MODE CODES ARE REJECTED.

7.4.1 TEST 4, SUBTEST 1;-

THIS SUBTEST VERIFIES THAT A FORMAT COMMAND (WITH ANY LEGAL MODE CODE) WITH THE CLEAR VOLUME CHECK (CVC) BIT CLEAR IS REJECTED IF THE VOLUME CHECK (VCK) FLAG IS SET. ALL VALID MODE CODES ARE CHECKED.

7.4.2 TEST 4, SUBTEST 2:-

THIS SUBTEST VERIFIES THAT A FORMAT COMMAND WITH AN ILLEGAL MODE CODE CAUSES FUNCTION REJECT TERMINATION WITH THE ILLEGAL COMMAND (ILC) ERROR BIT SET. ALL ILLEGAL MODE CODES ARE CHECKED.

7.4.3 TEST 4, SUBTEST 3:-

THIS SUBTEST VERIFIES THAT WRITE TAPE MARK COMMANDS OPERATE PROPERLY, AND THAT READ COMMANDS SUBSEQUENTLY ISSUED TO DETECT THE WRITTEN TAPE MARKSTERMINATE WITH THE TAPE STATUS ALERT WITH THE TAPE MARK DETECTED (TMK) STATUS BIT SET. THE FOLLOWING SEQUENCE IS EXECUTED:

1. THE CONTROLLER IS INITIALIZED AND THE TAPE REWOUND. THIS SETS THE VOLUME CHECK (VCK) STATUS BIT.

2. A WRITE TAPE MARK COMMAND, WITH CVC=1, IS ISSUED AND PROPER TERMINATION AND STATUS IS VERIFIED (I.E. VCK=0, AND TMK=1).

3. SEVERAL MORE WRITE TAPE MARK COMMANDS, THESE WITH CVC=0, ARE ISSUED AND PROPER TERMINATION (NORMAL) AND STATUS (TMK) VERIFIED

4. A READ REVERSE COMMAND IS ISSUED AND PROPER TERMINATION (TAPE STATUS ALERT) AND STATUS (TMK) VERIFIED. IT IS ALSO VERIFIED THAT NO DATA IS TRANSFERRED INTO MEMORY.

5. A SPACE RECORDS REVERSE COMMAND IS ISSUED AND PROPER TERMINATION (TAPE STATUS ALERT) AND STATUS (TMK) VERIFIED.

6. THE TAPE IS REWOUND AND A READ FORWARD COMMAND IS ISSUED AND PROPER TERMINATION (TAPE STATUS ALERT) AND STATUS (TMK) VERIFIED. IT IS ALSO VERIFIED THAT NO DATA IS

TRANSFERRED INTO MEMORY.

7. A SPACE RECORDS REVERSE COMMAND THAT CONTAINS A RECORD COUNT GREATER THAN 1 IS ISSUED, AND IT IS VERIFIED THAT TAPE STATUS ALERT TERMINATION OCCURED, TMK=1 AND THAT RBPCR (RESIDUAL BYTE/RECORD COUNTER) CONTAINS THE PROPER NONZERO VALUE. THIS OPERATION VERIFIES THAT DETECTION OF THE TAPE MARK CAUSE THE SPACE RECORDS OPERATION TO BE PREMATURELY TERMINATED. THIS SHOULD LEAVE POSITION JUST BEFORE THE FIRS RECORD ON THE TAPE.

8. TAPE POSITION IS VERIFIED BY ISSUING ANOTHER SPACE RECORDS REVERSE COMMAND AND VERIFYING THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH THE REVERSE INTO BOT (RIB) ERROR STATUS BIT SET.

9. A SPACE RECORDS FORWARD COMMAND THAT CONTAINS A RECORD GREATER THAN 1 IS ISSUED AND IT IS VERIFIED THAT TAPE STATUS ALERT TERMINATION OCCURED, TMK=1, AND THAT RBPCR (RESIDUAL BYTE/RECORD COUNTER) CONTAINS THE PROPER NONZERO VALUE. THIS OPERATION VERIFIES THAT DETECTION OF THE TAPE MARK CAUSES THE SPACE RECORDS OPERATIONS TO PREMATURELY TERMINATE.

PROGRAM HEADER

```
                                        .SBTTL  PROGRAM HEADER
                                        .MCALL  SVC
000000                                  SVC                     ; INITIALIZE SUPERVISOR MACROS
                                        .ENABLE LC
                                        .NLIST  BEX,CND
000000                                  .ENABL  AMA,ABS
        002000                          . = 2000
002000                                  BGNMOD  TUV2A
002000                          TUV2A::
                                ;++
                                ; THE PROGRAM HEADER IS THE INTERFACE BETWEEN
                                ; THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.
                                ;--
                                        POINTER BGNSW,BGNSFT,BGNAU,BGNDU,BGNRPT,BGNSETUP
002000                                  HEADER  CZTUY,A,0,655.,0
002000                          L$NAME::                ;DIAGNOSTIC NAME
002000  103                             .ASCII /C/
002001  132                             .ASCII /Z/
002002  124                             .ASCII /T/
002003  125                             .ASCII /U/
002004  131                             .ASCII /Y/
002005  000                             .BYTE   0
002006  000                             .BYTE   0
002007  000                             .BYTE   0
002010                          L$REV::                 ;REVISION LEVEL
002010  101                             .ASCII  /A/
002011                          L$DEPO::                ;0
002011  060                             .ASCII  /0/
002012                          L$UNIT::                ;NUMBER OF UNITS
002012  000001                          .WORD   T$PTHV
002014                          L$TIML::                ;LONGEST TEST TIME
002014  001217                          .WORD   655.
002016                          L$HPCP::                ;POINTER TO H.W. QUES.
002016  072246                          .WORD   L$HARD
002020                          L$SPCP::                ;POINTER TO S.W. QUES.
002020  072406                          .WORD   L$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$LADP::                ;DIAG. END ADDRESS
002026  073350                          .WORD   L$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$DTP::                 ;PTR. TO DISPATCH TABLE
002040  072574                          .WORD   L$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  0000^0                  .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  023062                  .WORD   L$RPT
002064                  L$EXP4::
002064  000000                  .WORD   0
002066                  L$EXP5::
002066  000000                  .WORD   0
002070                  L$AUT::                 ;PTR. TO ADD UNIT CODE
002070  022560                  .WORD   L$AU
002072                  L$DUT::                 ;PTR. TO DROP UNIT CODE
002072  022656                  .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  021762                  .WORD   L$INIT
002106                  L$CCP::                 ;PTR. TO CLEAN-UP CODE
002106  023040                  .WORD   L$CLEAN
002110                  L$ACP::                 ;PTR. TO AUTO CODE
002110  022764                  .WORD   L$AUTO
002112                  L$PRT::                 ;PTR. TO PROTECT TABLE
002112  021752                  .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   PRIOS           ; 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.
                                ;--

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
    884
    885 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
```

MEMORY MANAGEMENT DEFINITIONS

```
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)
                        ;-
```

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

                                ;+
                                ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 2
                                ;(XST2)
                                ;-
                100000          X2.OPM  = BIT15                 ;OPERATION IN PROGRESS (TAPE MOVING)
                040000          X2.RCE  = BIT14                 ;RAM CHECKSUM ERROR
                035400          X2.SPARE= BIT13+BIT12+BIT11+BIT9+BIT8   ;NOT USED BY TU80 (ALWAYS=0)
                002000          X2.WCF  = BIT10                 ;WRITE CLOCK FAILURE (FIFO NOT EMPTIED BY TRANSPORT)
                000200          X2.EXTF = BIT7                  ;IF WRITE CHAR CMD THEN = EXTENDED FEATURES ENABLED
                000100          X2.BUFE = BIT6                  ;IF WRITE CHAR CMD THEN = BUFFERING ENABLED
                000077          X2.REV  = 000077                ;IF WRITE CHAR CMD THEN = MICROCODE REVISION LEVEL
                000007          X2.UNIT = BIT2+BIT1+BIT0        ;IF GET STATUS THEN = CURRENTLY SELECTED UNIT NO.

                                ;+
                                ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 3
                                ;(XST3)
                                ;-
                177400          X3.MDE  = 177400                ;MICRO-DIAGNOSTIC ERROR CODE
                000200          X3.SPARE= BIT7                  ;NOT USED BY TU80
                000100          X3.OPI  = BIT6                  ;OPERATION INCOMPLETE
                000040          X3.REV  = BIT5                  ;REVERSE
                000020          X3.TRF  = BIT4                  ;TRANSPORT RESPONSE FAILURE
                000010          X3.DCK  = BIT3                  ;DENSITY CHECK
                000006          X3.MBZ  =BIT2+BIT1              ;NOT USED ALWAYS 0
                000001          X3.RIB  = BIT0                  ;REVERSE INTO BOT

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


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

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

                                ;+
                                ;
                                ;DEVICE REGISTER OFFSETS
                                ;
```

```
1004                                ;-
1005
1006    177776                      TSBA==  -2
1007    177776                      TSBAL== -2
1008    177776                      TSDB==  -2                      ;TSDB/TSBA REGISTER
1009    177776                      TSDBL== -2                      ;TSDB/TSBA REGISTER
1010    177777                      TSBAH== -1
1011    177777                      TSDBH== -1                      ;TSDB/TSBA REGISTER HIGH BYTE
1012    000000                      TSSR==  0                       ;TSSR REGISTER
1013    000001                      TSSRH== 1                       ;TSSR REGISTER HIGH BYTE
1014
1015                                ;+
1016                                ; TSDB ADDRESS BIT DEFINITIONS
1017                                ;-
1018    000003                      A1715   = BIT1+BIT0             ;ADDRESS BITS 17:16 ARE IN 1;0
1019
1020                                ;+
1021                                ; COMMAND DEFINITIONS
1022                                ;-
1023    000017                      P.GETSTAT       = 17            ;GET STATUS
1024    000013                      P.INIT          = 13            ;INITIALIZE
1025    000012                      P.CONTROL       = 12            ;CONTROL COMMANDS
1026    000011                      P.FORMAT        = 11            ;FORMAT
1027    000010                      P.POSITION      = 10            ;POSITION
1028    000006                      P.WRTSUB        = 6             ;SUBSYSTEM WRITE
1029    000005                      P.WRITE         = 5             ;WRITE
1030    000004                      P.WRTCHAR       = 4             ;WRITE CHARACTERISTICS
1031    000001                      P.READ          = 1             ;READ
1032
1033                                ;+
1034                                ; COMMAND PACKET HEADER WORD BIT DEFINITIONS
1035                                ;-
1036    100000                          P.ACK   = BIT15             ;BUFFER AVAIL FOR CONTROLLER
1037    040000                          P.CVC   = BIT14             ;CLEAR VOLUME CHECK
1038    020000                          P.OPP   = BIT13             ;REVERSE SEQUENCE OF DATA BITS
1039    010000                          P.SWB   = BIT12             ;SWAP BYTES IN MEMORY
1040    007400                          P.MODE  = BIT11!BIT10!BIT9!BIT8 ;EXTENDED COMMAND MODE FIELD
1041    000200                          P.IE    = BIT7              ;INTERRUPT ENABLE
1042    000140                          P.FMT= BIT6!BIT5            ;PACKET HEADER TYPE (ALWAYS=0)
1043    000037                          P.CMD   = 37                ;MAJOR COMMAND FIELD
1044                                ;+
1045                                ; CONTROL COMMAND MODE CODES
1046                                ;-
1047    000000                          PC.RELEASE      = 0*256.    ;RELEASE BUFFER
1048    000400                          PC.REWIND       = 1*256.    ;REWIND
1049    001000                          PC.NOOP         = 2*256.    ;NO-OP
1050    002000                          PC.IEREW        = 4*256.    ;REWIND IMMEDIATE INTERRUPT
1051    002400                          PC.ERASE        = 5*256.    ;SECURITY ERASE
1052
1053                                ;+
1054                                ; CONTROLLER RAM DEFINITIONS
1055                                ;-
1056    000167                      RMCHBEG = 167                   ;CHARACTERISTICS IO DATA BEGIN RAM ADDRESS
1057    000200                      RMCHEND = 200                   ;CHARACTERISTICS IO DATA END RAM ADDRESS
1058    000020                      RMPKTBEG= 20                    ;COMMAND PACKET BEGIN RAM ADDRESS
1059    000027                      RMPKTEND= 27                    ;COMMAND PACKET END RAM ADDRESS
1060    000104                      RMMSGBEG= 104                   ;MESSAGE BUFFER BEGIN RAM ADDRESS
```

```
1061    000117                  RMMSGEND= 117                           ;MESSAGE BUFFER END RAM ADDRESS
1062                            ;+
1063                            ;
1064                            ;REGISTER DEFINITIONS IN THE MESSAGE BUFFER
1065                            ;
1066                            ;-
1067
1068    000006                  XST0==  6                               ;EXTENDED STATUS REGISTER C (WORD 4)
1069    000010                  XST1==  8.                              ;EXTENDED STATUS REGISTER 1 (WORD 5)
1070    000012                  XST2==  10.                             ;EXTENDED STATUS REGISTER 2 (WORD 6)
1071    000014                  XST3==  12.                             ;EXTENDED STATUS REGISTER 3 (WORD 7)
1072    000016                  XST4==  14.                             ;EXTENDED STATUS REGISTER 4 (WORD 8)
1073
1074
1075                            ;+
1076                            ;
1077                            ;OFFSETS TO WORD LOCATIONS IN PACKET DEFINITIONS
1078                            ;
1079                            ;-
1080
1081    000002                          PKLOW   = 2                     ;LOW ORDER CHARACTERISTIC DATA POINTER
1082    000004                          PKHI    = 4                     ;HIGH ORDER CHARACTERISTIC DATA POINTER
1083    000006                          PKBCNT  = 6                     ;NUMBER OF BYTES IN DATA PACKET
1084
1085    000010                          EXBCNT=10                       ;NUMBER OF BYTES IN EXTENDED DATA PACKET
1086
1087                            ;+
1088                            ;DATA PACKET OFFSETS FOR WRITE SUBSYTEM COMMAND
1089                            ;-
1090    000000                          BSEL0   = 0                     ;BYTE 0
1091    000001                          BSEL1   = 1                     ;BYTE 1
1092    000002                          SEL2    = 2                     ;WORD 2
1093    000004                          SELDATA = 4                     ;WORD 3
1094
1095                            ;+
1096                            ;BSEL0 SELECT CODES FOR WRITE SUBSYSTEM COMMAND
1097                            ;-
1098    000000                  PW.NOP          = 0                     ;NO-OP
1099    000001                  PW.RDRAM        = 1                     ;READ RAM
1100    000002                  PW.WTRAM        = 2                     ;WRITE RAM
1101    000003                  PW.RFIFO        = 3                     ;READ FIFO
1102    000004                  PW.WFIFO        = 4                     ;WRITE FIFO
1103    000005                  PW.RDSTAT       = 5                     ;READ STATUS
1104    000006                  PW.WCTL         = 6                     ;WRITE TAPE CONTROL
1105    000007                  PW.WFMT         = 7                     ;WRITE TAPE FORMAT
1106    000010                  PW.WMISC        = 10                    ;WRITE MISCELLANEOUS
1107    000011                  PW.WNPR         = 11                    ;WRITE NPR CONTROL
1108    000020                  PW.D22          = 20                    ;DO MICROTEST 22
1109    000021                  PW.D11          = 21                    ;DO MICROTEST 11
1110    000022                  PW.D13          = 22                    ;DO MICROTEST 13
1111    000023                  PW.NO1311       = 23                    ;DISABLE MICROTEST 11 AND 13
1112    000024                  PW.RDEXT        = 24                    ;READ EXT. TAPE STATUS (NOT SUPPORTED BY ALL TRANSPO
1113
1114                            ;+
1115                            ;BSEL1 CODES FOR WRITE TAPE CONTROL
1116                            ;-
1117    000200                  WC.IFAD         = BIT7                  ;IFAD - FORMATTER ADDRESS
```

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

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


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

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

```
        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                  DLEPR   =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
                        ;
        072604                  ROMBASE =       MOVER           ;START OF THE BOOT ROM aaaaa
        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
```

```
1222                                    .SBTTL  SPECIAL MACROS AND OPDEFS.
1223
1224
1225                                ;+
1226                                ;SAVE GENERAL REGS 1 TO 5
1227                                ;-
1228
1229                                        .MACRO  SAVREG
1230                                        JSR     R5,REGSAV
1231                                        .ENDM
1232
1233                                ;+
1234                                ; MACRO TO FORCE AN ERROR
1235                                ;-
1236                                .MACRO  FORCERROR       TAG,NOTSSR
1237                                .NLIST
1238                                .IIF NDF LISTALL, .NLIST
1239                                .LIST
1240                                .IF B NOTSSR
1241                                        MOV     TSSR(R5),R1             ;READ TSSR
1242                                .ENDC
1243                                        MOV     FORCER,FORCER           ;IS FORCER SET? (LEAVE C BIT ALONE)
1244                                        BNE     TAG                     ;BR IF YES
1245                                .NLIST
1246                                .IIF NDF LISTALL, .LIST
1247                                .LIST
1248                                .ENDM
1249
1250                                ;+
1251                                ; MACRO TO FORCE AN EXIT TO AVOID SECTION ITERATIONS
1252                                ;       WILL EXIT TO A LABEL IF FORCER IS NEGATIVE
1253                                ;       SO TO FORCE ERRORS AND EXIT ON 1 ERROR SET
1254                                ;       FORCER TO 177777
1255                                ;       TO FORCE ERRORS AND ITERATIONS SET FORCER TO 1.
1256                                ;-
1257                                .MACRO  FORCEXIT        TAG
1258                                .NLIST
1259                                .IIF NDF LISTALL, .NLIST
1260                                .LIST
1261                                        MOV     FORCER,FORCER           ;IS FORCER NEGATIVE?
1262                                        BMI     TAG                     ;BR IF YES
1263                                .NLIST
1264                                .IIF NDF LISTALL, .LIST
1265                                .LIST
1266                                .ENDM
1267                                ;+
1268                                ; MACRO TO INCREMENT ERROR COUNTS
1269                                ;-
1270                                .MACRO  NEXT.ERRNO
1271                                .NLIST
1272                                ;;;.IIF NDF LISTALL, .NLIST
1273                                        ERRNO=ERRNO+1
1274                                ;;;.IIF NDF LISTALL, .LIST
1275                                .LIST
1276                                .ENDM
1277
1278                                ;+
```

```
1279                                    ;MACRO TO PERFORM XOR
1280                                    ;-
1281
1282                                            .MACRO  XOR     A,B
1283                                            MOV     A,-(SP)
1284                                            BIC     B,(SP)
1285                                            BIC     A,B
1286                                            BIS     (SP)+,B
1287                                            .ENDM
1288
1289            000000                          EN=0                            ; INITIALIZE ERROR NUMBER
1290                                            .SBTTL  FORCER  - FORCE ERROR FLAG
1291
1292                                    ;
1293                                    ; THE FOLLOWING LOCATIONS MAY BE PATCHED BY THE USER
1294                                    ; TO OBTAIN THE RESULTS DESCRIBED FOR EACH.
1295                                    ;
1296
1297 002144  000000                     FORCER::        0       ; FORCE TYPE ALL HARD ERRORS (THE ONES CALLED -
1298                                                    ; - BY THE MACRO "IFERROR").  AN ERROR NEED NOT -
1299                                                    ; - EXIST, JUST ASSUME AND TYPE THE MESSAGE.
1300
1301
1302
```

```
                                        .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.
                                ;
1315 002146  000000             EPRTSW::        .WORD   0               ;PRINT SWITCH
1316 002150  000000             UNITN::         .WORD   0               ;UNIT # UNDER TEST.
1317 002152  000000             QVP::           .WORD   0               ;QUICK VERIFY FLAG.
1318 002154  000000             CSRADDR::       .WORD   0               ;ADDRESS OF CSR FOR CURRENT DEVICE
1319 002156  000224             IVEC::          .WORD   224             ;INTERRUPT VECTOR
1320 002160  000200             IPRI::          .WORD   PRI04           ;INTERRUPT PRIORITY.
1321 002162  000000             TSTCNT::        .WORD   0               ;NUMBER OF TESTS RUN IN THIS PASS
1322 002164  000000             LOOPCNT::       .WORD   0               ;REMAINING ITERATION COUNT FOR TEST
1323 002166  000000             DEVCNT::        .WORD   0               ;NUMBER OF DEVICE UNDER TEST
1324 002170  000000             FATFLG::        .WORD   0               ;SET IF FATAL ERROR IS DETECTED IN TEST
1325 002172  000000             INTRECV::       .WORD   0               ;SET IF TAPE INTERRUPT WAS RECEIVED
1326 002174  000000             BENBSW::        .WORD   0               ;BUFFER ENABLE SWITCH SW 0=OFF;1=ON
1327 002176  000000             EXPD::          .WORD   0               ;EXPECTED RAM DATA FOR PRAMPKT ROUTINE
1328 002200  000000             RECV::          .WORD   0               ;RECEIVED RAM DATA FOR PRAMPKT ROUTINE
1329 002202  000000             ERRHI::         .WORD   0               ;HIGH ADDRESS MEMORY ERROR
1330 002204  000000             ERRLO::         .WORD   0               ;LOW ADDRESS MEMORY ERROR
1331 002206                     RAMDATA::       .BLKW   16.             ;DATA READ FROM RAM PACKET OR MESSAGE BUF AREA
1332 002246  000000             RAMSIZ::        .WORD   0               ;RAM DATA SIZE FOR PRAMPKT ROUTINE
1333 002250  000000             RCVHIADD::      .WORD   0               ;RECEIVED BUFFER HIGH ADDRESS
1334 002252  000000             RCVLOADD::      .WORD   0               ;RECEIVED BUFFER LOW ADDRESS
1335 002254  000000             COUNT::         .WORD   0               ;TEST COUNT PATTERN
1336 002256  000000             DATA::          .WORD   0               ;TEST DATA
1337 002260  000000             TSTFLAG::       .WORD   0               ;TEST FLAG WORD
1338 002262  000000             TSTPTR::        .WORD   0               ;TSTBLK POINTER
1339 002264  000000             PRMNO::         .WORD   0               ;PRINT ROUTINE TEMP
1340 002266                     EXPMSG::        .BLKB   100.            ;EXPECTED MESSAGE BUFFER DATA
1341 002432                     RECMSG::        .BLKB   100.            ;RECEIVED MESSAGE BUFFER DATA
1342 002576                     T  3FR::        .BLKB   80.             ;TEMPORARY STORAGE FOR PRINT
1343 002716  000000             MESBFA::        .WORD   0               ;STORES ADDRESS OF MESSAGE BUFFER FOR ERR PRT
```

```
                                        .SBTTL  TSTBLK  - TEST DATA TABLE

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

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

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


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

003064  000000                TEMP1::         .WORD   0             ;SOME TEMP LOCATIONS.
003066  000000                TEMP2::         .WORD   0
003070  000000                XXCOMM::        .WORD   0             ;XXDP+ COMM BLOCK POINTER.
003072  000000                FREE::          .WORD   0             ;1ST FREE MEMORY ADDRESS...
003074  000000                FRESIZ::        .WORD   0             ;...AND SIZE (IN WORDS).
003076  000000                FREEHI:         .WORD   0             ;LAST WORD IN FREE SPACE
003100  000000                KTFLG::         .WORD   0             ;KT11, MEM AVAIL FLAG -
                                                                    ;- .WORD        0 = <24K OR NO KT -
                                                                    ;- NZ = >24K AND KT.
003102  000000                KTENABLE::      .WORD   0             ;SET BY TEST ROUTINES TO FLAG >28K UNDER TEST
003104  002000                PST32W::        .WORD   2000          ;32W BLOCK ADDRESS FOR 32K START
003106  000000                SIFLAG::        .WORD   0             ;
003110  000000                BADDAT::        .WORD   0             ;ACTUAL DATA
003112  000000                GDDAT::         .WORD   0             ;EXPECTED DATA
003114  000000                LOOPFL::        .WORD   0
003116                          CTAB::                              ;CONFIGURATION TABLES.
003116  000000                CTABM::         .WORD   0             ;CONFIG WORK.
003120  000000                                .WORD   0
003122  000000                                .WORD   0
003124  000000                                .WORD   0
003126  177777                                .WORD   -1            ;END OF MEM TABLE.
003130                          CTABE::
                                ;ERROR STATISTICS TABLE (1 WORD PER UNIT), 64 UNITS MAX:
                                ;
                                ;       0       =       UNIT NOT TESTED
                                ;       100000  =       UNIT ONLINE, NO ERRORS
                                ;       10XXXX  =       UNIT ONLINE, ENCOUNTERED XXXX ERRORS
                                ;       160000  =       UNIT DROPPED, NON-EXISTENT DEVICE REGISTER
                                ;       160001  =       UNIT DROPPED, NOT IDLE AT START
                                ;       14XXXX  =       UNIT DROPPED, ENCOUNTERED XXXX ERRORS
                                ;
003130                          ERTABL:         .BLKW   64.
003330  000000                  ERTABE:         .WORD   0

003332  000000                SKIPT:  .WORD   0                     ;1=SKIP SUBTEST 0=NO SKIP OF SUBTEST
```

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



                                ;+
                                ;NAMES OF DEVICES SUPPORTED
                                ;-

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

                                ;+
                                ;TEST DESCRIPTION
                                ;-
003342                                  DESCRIPT <CZTUYA0 TU80 FRONT END PRT C>
003342                          L$DESC::
003342  103     132     124             .ASCIZ  /CZTUYA0 TU80 FRONT END PRT C/
                                        .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/
004015     045     116     045  FUSI:    .ASCII  /%N%A/
004021     040     040     125  USI:     .ASCIZ  /  UNEXPECTED INTERRUPT/
```

GLOBAL TEXT MESSAGES

```
1500 004050  040  040  111  NSI:     .ASCIZ  /  INTERRUPT EXPECTED, NOT RECEIVED/
1501 004113  045  116  045  FNOINTR:         .ASCII  /%N%A/
1502 004117  040  040  116  NOINTR: .ASCIZ  /  NO INTERRUPT WAS GENERATED/
1503 004154  040  040  111  IFAULT: .ASCIZ  /  INTERRUPT FAULT/
1504 004176  045  101  040  INTX:   .ASCIZ  /%A  CPU PC: %06%A  TSBA: %06/
1505 004233  040  040  042  NOINIT: .ASCIZ  /  "BUS-INIT" DIDN'T INITIALIZE CONTROLLER/
1506 004305  040  040  042  NSINIT: .ASCIZ  /  "SOFT-INIT" DIDN'T INITIALIZE THE DPU/
1507 004355  040  040  042  BRINIT: .ASCIZ  /  "BUS-RESET" DIDN'T INITIALIZE THE DPU/
1508
1509 004425  000            NUL:    .ASCIZ  //
1510 004426  045  116  000  NULCR:  .ASCIZ  /%N/
1511 004431  045  101  040  EXPGOT: .ASCIZ  /%A EXP'D: %06%A, REC'D: %06/
1512 004465  045  116  045  EXPGT2: .ASCIZ  /%N%A EXP'D: %06%A, %06%N%A REC'D: %0%A, %06/
1513 004541  045  101  040  DUAD12: .ASCIZ  /%A REG(W) WRITTEN TO: %06%A REG(R) READ; EXP'D: %06%A, REC'D: %06/
1514 004643  122  101  115  PKTRAM::         .ASCIZ  'RAM Contents Do Not Match Packet Sent'
1515 004711  040  040  103  SCME:   .ASCIZ  /  CONFIG DOESN'T MATCH MFG. MASTER/
1516 004754  127  122  111  WRTMSG: .ASCIZ  'WRITE CHARACTERISTICS Failed'
1517 005011  124  123  123  WRTERR: .ASCIZ  'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
1518 005104  124  123  123  RDERR:  .ASCIZ  'TSSR Incorrect After READ Command, More Bits Set Than SSR'
1519                         .EVEN
1520
1521
1522
```

```
1524                                            .SBTTL  GLOBAL ERROR REPORT SECTION
1525
1526                                    ;++
1527                                    ; THE GLOBAL ERROR REPORT SECTION CONTAINS THE PRINTB AND PRINTX
1528                                    ; CALLS THAT ARE USED IN MORE THAN ONE TEST.
1529                                    ; ASCII TEXT STRINGS ARE FOUND IN THE GLOBAL TEXT SECTION.
1530                                    ;--
1531
1532 005176                                     BGNMSG  NXRERR                  ;NON-EXISTANT DEVICE REGISTER.
     005176                             NXRERR::
1533 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$PNTX
     005216  062706  000006                     ADD     #6,SP
1534 005222  004737  005230                     JSR     PC,EXTEND               ; PRINT EXTENSION IF REQUIRED.
1535 005226                                     ENDMSG
     005226                             L10002:
     005226  104423                             TRAP    C$MSG
1536
1537
1538                                    ;
1539                                    ; THIS ROUTINE APPENDS A UNIQUE EXTENSION (IF REQUIRED)
1540                                    ; TO ANY OF THE ABOVE ERROR SIGNATURES.
1541                                    ;
1542 005230  005727                     EXTEND: TST     (PC)+
1543 005232  000000                     EXTA:   0                               ; 0 = NO EXTENSION.
1544 005234  001402                             BEQ     1$
1545 005236  004777  177770                     JSR     PC,@EXTA                ; APPEND EXTENSION TEXT.
1546 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
1547 005262  000207                             RTS     PC
```

```
1550                                    .SBTTL  PRITSSR - PRINT TSSR CONTENTS
1551
1552                                ;+
1553                                ;
1554                                ;ROUTINE TO DISPLAY THE CONTENTS, AND BIT DEFINITIONS, OF
1555                                ;THE TSSR REGISTER. THIS ROUTINE IS NORMALLY CALLED ONLY
1556                                ;BY A MESSAGE PRINTING ROUTINE
1557                                ;
1558                                ;INPUTS:
1559                                ;
1560                                ;       R1      CONTENTS OF TSSR
1561                                ;
1562                                ;SUBORDINATE ROUTINES:
1563                                ;
1564                                ;       CHKAMB  CHECK FOR AMBIGUOUS CONTENTS
1565                                ;
1566                                ;-
1567
1568 005264                        PRITSSR:
1569 005264                                SAVREG                          ;SAVE GENERAL REGISTERS
1570 005270  010104                       MOV     R1,R4                   ;SAVE THE TSSR CONTENTS
1571 005272                               PRINTB  #TSSRFOR,R4             ;PRINT THE CONTENTS OF TSSR
     005272  010446                       MOV     R4,-(SP)
     005274  012746  006116               MOV     #TSSRFOR,-(SP)
     005300  012746  000002               MOV     #2,-(SP)
     005304  010600                       MOV     SP,R0
     005306  104414                       TRAP    C$PNTB
     005310  062706  000006               ADD     #6,SP
1572 005314  010400                       MOV     R4,R0                   ;GET TSSR BACK FOR CHKAMB
1573 005316  004737  016714               JSR     PC,CHKAMB               ;ARE CONTENTS AMBIGUOUS ?
1574 005322  103410                       BCS     5$                      ;BRANCH IF NOT
1575 005324                               PRINTX  #AMBTSSR                ;SHOW CONTENTS ARE AMBIGUOUS
     005324  012746  006336               MOV     #AMBTSSR,-(SP)
     005330  012746  000001               MOV     #1,-(SP)
     005334  010600                       MOV     SP,R0
     005336  104415                       TRAP    C$PNTX
     005340  062706  000004               ADD     #4,SP
1576 005344  010403               5$:     MOV     R4,R3                   ;CONTENTS OF TSSR
1577 005346  042703  001476               BIC     #HIADDR!FATERR!TERCLS,R3        ;CLEAR ALL MULTIPLE BIT FIELDS
1578 005352  001434                       BEQ     20$                     ;NO BITS ARE SET
1579 005354  012702  002576               MOV     #TMPBFR,R2              ;TEMPORARY ASCII BUFFER
1580 005360  012701  003400               MOV     #TSSRBIT,R1             ;ASCII EQUIVALENT OF BITS
1581 005364  005703               10$:    TST     R3                      ;REMAINING BITS TO CONVERT
1582 005366  001413                       BEQ     15$                     ;BRANCH WHEN ALL ARE DONE
1583 005370  000241                       CLC                             ;CLEAR CARRY FOR SHIFT
1584 005372  006103                       ROL     R3                      ;SHIFT NEXT BIT TO CARRY
1585 005374  103006                       BCC     13$                     ;BRANCH IF BIT NOT SET
1586 005376  011100                       MOV     (R1),R0                 ;POINTER TO BIT DEFINITION
1587 005400  112022               11$:    MOVB    (R0)+,(R2)+             ;MOVE ASCIZ TO BUFFER
1588 005402  001376                       BNE     11$                     ;MOVE ALL BITS
1589 005404  112762  000054  177777       MOVB    #',,-1(R2)              ;INSERT A COMMA TO TERMINATE
1590 005412  005721               13$:    TST     (R1)+                   ;POINT TO NEXT DESCRIPTION
1591 005414  000763                       BR      10$                     ;GET THE REMAINING BITS
1592 005416  105042               15$:    CLRB    -(R2)                   ;TERMINATE THE LINE
1593 005420                               PRINTX  #TSSDEF,#TMPBFR         ;PRINT THE BIT DEFINITIONS
     005420  012746  002576               MOV     #TMPBFR,-(SP)
     005424  012746  006307               MOV     #TSSDEF,-(SP)
```

```
        005430  012746  000002                  MOV     #2,-(SP)
        005434  010600                          MOV     SP,R0
        005436  104415                          TRAP    C$PNTX
        005440  062706  000006                  ADD     #6,SP
  1594
  1595  005444  010403                  20$:    MOV     R4,R3                   ;GET THE TSSR CONTENTS
  1596  005446  042703  177761                  BIC     #^CTERCLS,R3            ;CLEAR ALL BUT TERMINATION
  1597  005452  016303  006400                  MOV     TCOCOD(R3),R3           ;GET THE TERMINATION CODE MEANING
  1598  005456                                  PRINTX  #TCOASC,R3              ;PRINT THE TERMINATION CODE
        005456  010346                          MOV     R3,-(SP)
        005460  012746  006177                  MOV     #TCOASC,-(SP)
        005464  012746  000002                  MOV     #2,-(SP)
        005470  010600                          MOV     SP,R0
        005472  104415                          TRAP    C$PNTX
        005474  062706  000006                  ADD     #6,SP
  1599  005500  010403                          MOV     R4,R3                   ;TSSR CONTENTS AGAIN
  1600  005502  042703  177717                  BIC     #^CFATERR,R3            ;CLEAR ALL BUT FATAL TERMINATION
  1601  005506  001421                          BEQ     25$                     ;DON'T PRINT IF ZERO
  1602  005510  006203                          ASR     R3
  1603  005512  006203                          ASR     R3
  1604  005514  006203                          ASR     R3                      ;ALINE TERMINATION CODE FOR INDEX
  1605  005516  016303  006740                  MOV     TSFCOD(R3),R3           ;GET THE FATAL TERMINATION CODE
  1606  005522                                  PRINTX  #TFCASC,R3              ;PRINT THE FATAL TERMINATION CODE
        005522  010346                          MOV     R3,-(SP)
        005524  012746  006240                  MOV     #TFCASC,-(SP)
        005530  012746  000002                  MOV     #2,-(SP)
        005534  010600                          MOV     SP,R0
        005536  104415                          TRAP    C$PNTX
        005540  062706  000006                  ADD     #6,SP
  1607  005544  012737  000031  002170          MOV     #25.,FATFLG             ;DROP THIS UNIT AFTER ERROR MESSAGE
  1608  005552  010403                  25$:    MOV     R4,R3                   ;GET TSSR CONTENTS
  1609  005554  042703  176377                  BIC     #^CHIADDR,R3            ;CLEAR ALL BUT EXTENDED ADDRESS
  1610  005560  001411                          BEQ     30$                     ;DON'T PRINT IF ZERO
  1611  005562                                  PRINTX  #TEXASC,R3              ;PRINT THE EXTENDED ADDRESS BITS
        005562  010346                          MOV     R3,-(SP)
        005564  012746  006136                  MOV     #TEXASC,-(SP)
        005570  012746  000002                  MOV     #2,-(SP)
        005574  010600                          MOV     SP,R0
        005576  104415                          TRAP    C$PNTX
        005600  062706  000006                  ADD     #6,SP
  1612  005604  022704  100210          30$:    CMP     #100210,R4              ;CHECK FOR MEDIA ERROR
  1613  005610  001003                          BNE     31$                     ;BR, IF PROBABLY NOT TAPE ERROR
  1614  005612  012737  006025  002146          MOV     #EPRT3,EPRTSW           ;"PROBABLY MEDIA RELETED ERROR - BAD TAPE"
  1615  005620  005737  002146          31$:    TST     EPRTSW                  ;CHECK FOR THE SWITCH EMPTY
  1616  005624  001003                          BNE     310$                    ;BR, IF SWITCH IS NOT EMPTY
  1617  005626  012737  005672  002146          MOV     #EPRT1,EPRTSW           ;SET SWITCH TO DEFAULT
  1618  005634  013737  002146  005644  310$:   MOV     EPRTSW,32$+2            ;PUT REAL SWITCHABLE MESSAGE IN PLACE
  1619  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
  1620  005662  012737  005672  002146          MOV     #EPRT1,EPRTSW           ;RESET TO NORMAL ERROR POINTER
  1621  005670  000207                          RTS     PC                      ;RETURN TO CALLER
  1622
  1623  005672      045     116     045  EPRT1:  .ASCIZ  '%N%A *****CHECK CABLES BETWEEN M7454 AND TRANSPORT*****%S'
```

```
1624 005764      045      116      045  EPRT2:  .ASCIZ  '%N%A *****CHECK TRANSPORT*****%S'
1625 006025      045      116      045  EPRT3:  .ASCIZ  '%N%A *****POSSIBLE MEDIA RELATED ERROR - BAD TAPE*****%S'
1626 006116      045      116      045  TSSRFOR:        .ASCIZ  '%N%A TSSR = %O6'
1627 006136      045      116      045  TEXASC:         .ASCIZ  '%N%A Extended Address Bits = %O6'
1628 006177      045      116      045  TCOASC:         .ASCIZ  '%N%A Termination Class Code = %T'
1629 006240      045      116      045  TFCASC:         .ASCIZ  '%N%A Fatal Termination Class Code = %T'
1630 006307      045      116      045  TSSDEF:         .ASCIZ  '%N%A TSSR Bits Set: %T'
1631 006336      045      116      045  AMBTSSR:        .ASCIZ  '%N%A TSSR Contents Are Ambiguous'
1632                                                  .EVEN
1633 006400   006420   006443   006471  TCOCOD: .WORD   1$,2$,3$,4$,5$,6$,7$,8$
1634 006420      116      157      162  1$:     .ASCIZ  'Normal Termination'
1635 006443      124      145      162  2$:     .ASCIZ  'Termination Condition'
1636 006471      124      141      160  3$:     .ASCIZ  'Tape Status Alert'
1637 006513      106      165      156  4$:     .ASCIZ  'Function Reject'
1638 006533      122      145      143  5$:     .ASCIZ  'Recoverable Error - Tape Position One Record Down'
1639 006615      122      145      143  6$:     .ASCIZ  'Recoverable Error - Tape Was Not Moved'
1640 006664      125      156      162  7$:     .ASCIZ  'Unrecoverable Error'
1641 006710      106      141      164  8$:     .ASCIZ  'Fatal Controller Error'
1642                                              .EVEN
1643
1644 006740   006750   007004   007015  TSFCOD: .WORD   1$,2$,3$,4$
1645 006750      111      156      164  1$:     .ASCIZ  'Internal Diagnostic Failure'
1646 007004      122      145      163  2$:     .ASCIZ  'Reserved'
1647 007015      102      165      163  3$:     .ASCIZ  'Bus Interface or Sanity Check Error'
1648 007061      122      145      163  4$:     .ASCIZ  'Reserved'
1649                                              .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.
                                ;-
007072                          PRIPKT::
007072                                  SAVREG                          ;SAVE THE REGISTERS
007076  010005                          MOV     R0,R5                   ;SAVE NO. OF WORDS IN PACKET
007100  005737  003102                  TST     KTENABLE                ;ABOVE 28K UNDER TEST?
007104  001001                          BNE     10$                     ;BR IF YES
007106  005003                          CLR     R3                      ;SET HIGH ORDER ADDRESS TO 0
007110  010301                  10$:    MOV     R3,R1                   ;COPY HIGH ORDER ADDRESS
007112  010400                          MOV     R4,R0                   ;GET LOWER ADDRESS
007114  006100                          ROL     R0                      ;SHIFT BIT 15 INTO C BIT
007116  006101                          ROL     R1                      ;AND INTO HIGH ORDER.
007120                                  PRINTB  #PKTADD,R1,R4           ;PRINT PACKET ADDRESS
007120  010446                          MOV     R4,-(SP)
007122  010146                          MOV     R1,-(SP)
007124  012746  007276                  MOV     #PKTADD,-(SP)
007130  012746  000003                  MOV     #3,-(SP)
007134  010600                          MOV     SP,R0
007136  104414                          TRAP    C$PNTB
007140  062706  000010                  ADD     #10,SP
007144  010300                  15$:    MOV     R3,R0                   ;GET HIGH ORDER ADDRESS
007146  001404                          BEQ     20$                     ;BR IF NOT ABOVE 28K.
007150  010401                          MOV     R4,R1                   ;GET LOW ORDER ADDRESS
007152  004737  020266                  JSR     PC,SETMAP               ;SETUP PAR6 MAPPING FOR 18 BIT ADDRESS
007156  010004                          MOV     R0,R4                   ;GET RETURNED PAR6 ADDRESS BIAS
007160  005001                  20$:    CLR     R1                      ;SAVE WORD NUMBER
007162  012402                  25$:    MOV     (R4)+,R2                ;GET PACKET CONTENTS
007164                                  PRINTB  #PKTFRM,R1,R2           ;PRINT THE DATA
007164  010246                          MOV     R2,-(SP)
007166  010146                          MOV     R1,-(SP)
007170  012746  007240                  MOV     #PKTFRM,-(SP)
007174  012746  000003                  MOV     #3,-(SP)
007200  010600                          MOV     SP,R0
007202  104414                          TRAP    C$PNTB
007204  062706  000010                  ADD     #10,SP
007210  005201                          INC     R1                      ;NEXT WORD NUMBER
007212  020105                          CMP     R1,R5                   ;DONE ALL PACKET WORDS?
007214  002762                          BLT     25$                     ;LOOP TILL ALL DONE
007216                                  PRINTB  #PKTNEW                 ;JUST A COUPLE NEW LINES
007216  012746  007333                  MOV     #PKTNEW,-(SP)
007222  012746  000001                  MOV     #1,-(SP)
007226  010600                          MOV     SP,R0
007230  104414                          TRAP    C$PNTB
007232  062706  000004                  ADD     #4,SP
007236  000207                          RTS     PC                      ;RETURN
007240     045     116     045  PKTFRM: .ASCIZ  '%N%A Packet Word #%D1%A = %06'
007276     045     116     045  PKTADD: .ASCIZ  '%N%A Packet Address = %01%05'
007333     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
                                ;
                                ;-

007344                          PRIBXOR::
007344                                  SAVREG                          ;SAVE THE REGISTERS
007350  010203                          MOV     R2,R3                   ;EXPECTED DATA
007352                                  XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007362  012700  177400                  MOV     #^C<377>,R0             ;BYTE MASK
007366  040001                          BIC     R0,R1                   ;SAVE LOW BYTE RECV
007370  040002                          BIC     R0,R2                   ;SAVE LOW BYTE EXPD
007372  040003                          BIC     R0,R3                   ;SAVE LOW BYTE XOR
007374                                  PRINTB  #XORBFOR,R2,R1,R3 ;PRINT THE MESSAGE
007374  010346                          MOV     R3,-(SP)
007376  010146                          MOV     R1,-(SP)
007400  010246                          MOV     R2,-(SP)
007402  012746  007426                  MOV     #XORBFOR,-(SP)
007406  012746  000004                  MOV     #4,-(SP)
007412  010600                          MOV     SP,R0
007414  104414                          TRAP    C$PNTB
007416  062706  000012                  ADD     #12,SP
007422  010300                          MOV     R3,R0                   ;R0 HAS XOR ON RETURN
007424  000207                          RTS     PC                      ;RETURN TO CALLER

007426      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
                                ;
                                ;-

007474                          PRIXOR::
007474                                  SAVREG                  ;SAVE THE REGISTERS
007500  010203                          MOV     R2,R3           ;EXPECTED DATA
007502                                  XOR     R1,R3           ;FORM THE EXCLUSIVE OR
007512                                  PRINTB  #XORFOR,R2,R1,R3 ;PRINT THE MESSAGE
007512  010346                          MOV     R3,-(SP)
007514  010146                          MOV     R1,-(SP)
007516  010246                          MOV     R2,-(SP)
007520  012746  007544                  MOV     #XORFOR,-(SP)
007524  012746  000004                  MOV     #4,-(SP)
007530  010600                          MOV     SP,R0
007532  104414                          TRAP    C$PNTB
007534  062706  000012                  ADD     #12,SP
007540  010300                          MOV     R3,R0           ;R0 HAS XOR ON RETURN
007542  000207                          RTS     PC              ;RETURN TO CALLER

007544     045     116     045  XORFOR: .ASCIZ  '%N%A EXPD: %06%A RECV: %06%A XOR: %06'
                                        .EVEN
```

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

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

007612                          PRIEQU:
007612                                  SAVREG                          ;SAVE THE REGISTERS
007616  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
                                ;
                                ;-
007620                          PRIRAM:
007620                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
007624                                  PRINTB  #RAMFOR,R4              ;PRINT RAM ADDRESS IN ERROR
007624  010446                          MOV     R4,-(SP)
007626  012746  007650                  MOV     #RAMFOR,-(SP)
007632  012746  000002                  MOV     #2,-(SP)
007636  010600                          MOV     SP,R0
007640  104414                          TRAP    C$PNTB
007642  062706  000006                  ADD     #6,SP
007646  000207                          RTS     PC                      ;RETURN

007650      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
```

```
                                        ;
                                        ;-
                                        PRIADD:
007712                                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
007712
007716  013700  002202                          MOV     ERRHI,R0                ;GET HIGH ADDRESSS
007722  013701  002204                          MOV     ERRLO,R1                ;GET LOW ADDRESS
007726  010102                                  MOV     R1,R2                   ;COPY LOW ADDRESS
007730  006101                                  ROL     R1                      ;SHIFT BIT 15 TO C BIT
007732  006100                                  ROL     R0                      ;SHIFT INTO HIGH ORDER
007734                                          PRINTB  #PRIA0,R0,R2            ;PRINT MEMORY ADDRESS IN ERROR
007734  010246                                  MOV     R2,-(SP)
007736  010046                                  MOV     R0,-(SP)
007740  012746  007762                          MOV     #PRIA0,-(SP)
007744  012746  000003                          MOV     #3,-(SP)
007750  010600                                  MOV     SP,R0
007752  104414                                  TRAP    C$PNTB
007754  062706  000010                          ADD     #10,SP
007760  000207                                  RTS     PC                      ;RETURN

007762    045     116     045   PRIA0:  .ASCIZ  '%N%A MEMORY ERROR ADDRESS = %01%05'
                                        .EVEN


                                        .SBTTL  PRITADD - PRINT MEMORY TEST ADDRESS
                                        ;+
                                        ;
                                        ;PRINT MEMORY ADDRESS
                                        ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
                                        ;
                                        ; IMPLICIT INPUTS
                                        ;
                                        ;       ERRHI   - HIGH ORDER ADDRESS
                                        ;       ERRLO   - LOW ORDER ADDRESS
                                        ;
                                        ;-
                                        PRITADD:
010026                                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
010026
010032  013700  002202                          MOV     ERRHI,R0                ;GET HIGH ADDRESSS
010036  013701  002204                          MOV     ERRLO,R1                ;GET LOW ADDRESS
010042  010102                                  MOV     R1,R2                   ;COPY LOW ADDRESS
010044  006101                                  ROL     R1                      ;SHIFT BIT 15 TO C BIT
010046  006100                                  ROL     R0                      ;SHIFT INTO HIGH ORDER
010050                                          PRINTB  #PRIT0,R0,R2            ;PRINT MEMORY ADDRESS IN ERROR
010050  010246                                  MOV     R2,-(SP)
010052  010046                                  MOV     R0,-(SP)
010054  012746  010076                          MOV     #PRIT0,-(SP)
010060  012746  000003                          MOV     #3,-(SP)
010064  010600                                  MOV     SP,R0
010066  104414                                  TRAP    C$PNTB
010070  062706  000010                          ADD     #10,SP
010074  000207                                  RTS     PC                      ;RETURN

010076    045     116     045   PRIT0:  .ASCIZ  '%N%A MEMORY TEST ADDRESS = %01%05'
                                        .EVEN
```

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

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

010140                          SPACE::
010140                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
010144  012737  000764  010330          MOV     #500.,SDELAY    ;SET UP DELAY
010152  012737  140010  010320          MOV     #140010,80$     ;SET UP COMMAND, SPACE FORWARD
010160  005703                          TST     R3              ;CHECK FOR DIRECTION
010162  100403                          BMI     5$              ;BR, IF REVERSE INDICATED
010164  010337  010322                  MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010170  000407                          BR      10$             ;GO DO COMMAND
010172  042703  100000          5$:     BIC     #BIT15,R3       ;CLEAR DIRECTION BIT
010176  010337  010322                  MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010202  052737  000400  010320          BIS     #BIT8,80$       ;SET REVERSE BIT IN COMMAND PACKET
010210  012704  010320          10$:    MOV     #80$,R4         ;SET UP R4 WITH PACKET ADDRESS
010214  010465  177776                  MOV     R4,TSDB(R5)     ;SEND OUT COMMAND
010220  004737  017120          15$:    JSR     PC,WAITF        ;WAIT FOR SSR
010224  103420                          BCS     20$             ;BR, IF SSR IS SET AND OK
010226                                  DELAY   250             ;DELAY ABOUT .25 SECONDS
010226  012727  000250                  MOV     #250,(PC)+
010232  000000                          .WORD   0
010234  013727  002116                  MOV     L$DLY,(PC)+
010240  000000                          .WORD   0
010242  005367  177772                  DEC     -6(PC)
010246  001375                          BNE     .-4
```

```
        010250  005367  177756                  DEC     -22(PC)
        010254  001367                          BNE     .-20
  1896  010256  005337  010330                  DEC     SDELAY          ;BUMP DELAY COUNTER DOWN
  1897  010262  001356                          BNE     15$             ;BR, IF MORE DELAY
  1898  010264  000411                          BR      60$             ;BR IF TROUBLE CARRY = CLEAR
  1899  010266  016501  000000          20$:    MOV     TSSR(R5),R1     ;READ TSSR
  1900  010272  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
  1901  010276  020201                  25$:    CMP     R2,R1           ;ARE THEY OK
  1902  010300  001401                          BEQ     40$             ;BR, IF EQUAL = OK
  1903  010302  000402                          BR      60$             ;TROUBLE EXIT
  1904  010304  000261                  40$:    SEC                     ;SET CARRY NO TROUBLE
  1905  010306  000401                          BR      70$             ;EXIT
  1906  010310  000241                  60$:    CLC                     ;CARRY CLEAR = ERROR
  1907  010312  010400                  70$:    MOV     R4,R0           ;PASS PACKET ADDRESS
  1908  010314  000207                          RTS     PC              ;RETURN
  1909                                  ;
  1910                                  ;PACKET FOR SPACE COMMAND
  1911                                  ;
  1913  010316                                  .BLKB   10-<.-TUV2A&7>
  1915                                  ;COMMAND WORD
  1916  010320  000000                  80$:    .WORD
  1917                                  ;NUMBER OF RECORDS TO BE SPACED OVER WORD
  1918  010322  000000                  90$:    .WORD
  1919  010324  000000                          .WORD
  1920  010326  000000                          .WORD
  1921  010330  000000                  SDELAY: .WORD   0               ;DELAY COUNTER
  1922                                          .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:
                                ;
                                ;
                                ;-
                                WRTCHR::
                                        SAVREG                  ;SAVE THE GENERAL REGISTERS
                                        CLR     BENBSW          ;CLEAR BUFFER ENABLE SWITCH
                                10$:    MOV     R4,TSDB(R5)     ;SEND OUT COMMAND
                                        JSR     PC,CHKTSSR      ;WAIT FOR SSR
                                        BCS     20$             ;BR, IF SSR IS SET AND OK
                                        BR      60$             ;BR IF TROUBLE CARRY = CLEAR
                                20$:    MOV     TSSR(R5),R1     ;READ TSSR
                                        MOV     #SSR,R2         ;SET UP EXPECTED
                                        BIT     #OFL,R1         ;WAS OFF LINE SET IN TSSR
                                        BEQ     25$             ;BR, IF NO OFL SET
                                        BIS     #OFL,R2         ;MAKE THEM LOOK ALIKE
                                25$:    CMP     R2,R1           ;ARE THEY OK
                                        BEQ     40$             ;BR, IF EQUAL = OK
                                        BR      60$             ;TROUBLE EXIT
                                40$:    ADD     #8.,R4          ;POINT TO WRT CHARA DATA PACKET
                                        MOV     (R4),R3         ;GET ADDRESS OF MESSAGE BUFFER
                                        MOV     R3,MESBFA       ;STORE FOR PRINT ROUTINES
                                        SEC                     ;SET CARRY NO TROUBLE
                                        BR      70$             ;EXIT
                                60$:    CLC                     ;CARRY CLEAR = ERROR
                                70$:    MOV     TSSR(R5),R0     ;RETURN TSSR CONTENTS
                                        RTS     PC              ;RETURN
```

```
                                                        .SBTTL  REWIND  - POSITION TAPE (REWIND) COMMAND
                                                ;+
                                                ;THIS ROUTINE WILL REWIND THE SELECTED TAPE.
                                                ;       CAUTION: THE ROUTINE DOES NOT WAIT FOR BOT
                                                ;                TO ARRIVE. ALSO THE CALLER MUST CHECK FOR
                                                ;                SSR TO SET IN THE TSSR
                                                ;
                                                ;CALLING SEQUENCE:
                                                ;       DO A SOFT INIT
                                                ;       DO A WRITE CHARACTERISTICS
                                                ;       JSR     PC,REWIND
                                                ;INPUT:
                                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                                ;
                                                ;OUTPUT
                                                ;       R0      THE CONTENTS OF R4 IS PASSED TO R0
                                                ;-
010434                                          REWIND::
010434                                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
010440  012704  010530                                  MOV     #RWPACK,R4              ;GET PACKET ADDRESS
010444  010465  177776                                  MOV     R4,TSDB(R5)             ;SEND PACKET ADDRESS TO EXECUTE
010450  012703  000550                                  MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
010454  004737  017120                          10$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
010460  103417                                          BCS     20$                     ;LEAVE WHEN SSR IS SET
010462                                                  DELAY   250.                    ;WAIT FOR .25 SECONDS
010462  012727  000372                                  MOV     #250.,(PC)+
010466  000000                                          .WORD   0
010470  013727  002116                                  MOV     L$DLY,(PC)+
010474  000000                                          .WORD   0
010476  005367  177772                                  DEC     -6(PC)
010502  001375                                          BNE     .-4
010504  005367  177756                                  DEC     -22(PC)
010510  001367                                          BNE     .-20
010512  005303                                          DEC     R3                      ;BUMP COUNTER DOWN
010514  001357                                          BNE     10$                     ;KEEP GOING
010516  000241                                          CLC                             ;CLEAR CARRY TO SET ERROR
010520  010400                                  20$:    MOV     R4,R0                   ;PASS THE PACKET ADDRESS
010522  000207                                          RTS     PC                      ;RETURN
010524                                                  .BLKB   10-<.-TUV2A&7>
010530                                          RWPACK:
010530  102010                                          .WORD   102010                  ;POSTION COMMAND (REWIND)
010532  000000                                          .WORD   0                       ;NOT USED
```

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

                                ;+
                                ;
                                ;ROUTINE TO READ THE FIRST 8 BYTES FROM RAM
                                ;MEMORY AND COMPARE THIS DATA TO A COMMAND PACKET.
                                ;
                                ;INPUT:
                                ;
                                ;       R4      ADDRESS OF THE COMMAND PACKET
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - RAM MATCHES PACKET
                                ;               CLR - RAM DOES NOT MATCH PACKET
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       THE TABLE RAMDATA IS FILLED WITH THE
                                ;       DATA HELD IN RAM.
                                ;       RAMSIZ IS SET TO 8. FOR PRAMPKT ROUTINE
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;
                                ;-
                                ;
010534                          CKRAM::
010534                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
010540  012701  002206                  MOV     #RAMDATA,R1     ;ADDRESS TO SAVE THE RAM DATA
010544  012702  000020                  MOV     #RMPKTBEG,R2    ;BYTE ADDRESS OF FIRST RAM DATA
010550  005003                          CLR     R3              ;CLEAR THE ERROR FLAG
010552  004737  017234                  JSR     PC,CHKTSSR      ;WAIT FOR SSR
010556  004737  017234          10$:    JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
010562  110265  177777                  MOVB    R2,TSDBH(R5)    ;SELECT NEXT RAM ADDRESS
010566  004737  017234                  JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
010572  116511  177776                  MOVB    TSBAL(R5),(R1)  ;READ THE RAM DATA
010576  122124                          CMPB    (R1)+,(R4)+     ;COMPARE TO EXPECTED
010600  001401                          BEQ     20$             ;BRANCH IF OK
010602  005203                          INC     R3              ;SET ERROR FLAG
010604  005202                  20$:    INC     R2              ;ADDRESS OF NEXT RAM LOCATION
010606  020227  000027                  CMP     R2,#RMPKTEND    ;REACHED END YET ?
010612  003761                          BLE     10$             ;BRANCH TILL ALL READ
010614  005703                          TST     R3              ;WAS AN ERROR FOUND ?
010616  001402                          BEQ     30$             ;BRANCH IF NOT
010620  000241                          CLC                     ;CLEAR CARRY TO SHOW ERROR
010622  000401                          BR      50$             ;AND EXIT
010624  000261                  30$:    SEC                     ;SHOW GOOD COMPARE
010626  012737  000010  002246  50$:    MOV     #8.,RAMSIZ      ;SETUP RAMSIZ FOR PRAMPKT ROUTINE
010634  000207                          RTS     PC              ;RETURN
```

RAMER - READ AND DISPLAY SELECTED RAM

```
                                        .SBTTL RAMER - READ AND DISPLAY SELECTED RAM
                                ;+
                                ;ROUTINE TO READ THE SELECTED RAM LOCATIONS
                                ;INPUT:
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;       CONSOLE WILL ALSO BE PRINTED TO
                                ;IMPLICIT OUTPUT:
                                ;       THE TABLE RAMDATA IS FILLED WITH THE
                                ;       DATA HELD IN RAM.
                                ;-
010636                          RAMER::
010636                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
010642  013705  011022                  MOV     RAMR5H,R5               ;RESET R5 TO FIRST DEVICE REGISTER
010646  012701  002206                  MOV     #RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
010652  013702  011020                  MOV     RAMHLD,R2               ;BYTE ADDRESS OF THE FIRST RAM DATA
010656  013703  002246                  MOV     RAMSIZ,R3               ;SET THE SIZE OF THE READ UP
010662  004737  017234          10$:    JSR     PC,CHKTSSR              ;WAIT FOR THE SSR TO SET
010666  110265  177777                  MOVB    R2,TSDBH(R5)            ;SELECT NEXT RAM ADDRESS
010672  004737  017234                  JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
010676  116521  177776                  MOVB    TSBAL(R5),(R1)+         ;READ THE RAM DATA
010702  062702  000001          20$:    ADD     #1,R2                   ;ADDRESS OF THE NEXT RAM LOCATION
010706  077313                          SOB     R3,10$                  ;NUMBER OF LOCATIONS COUNTER
010710  013704  002246                  MOV     RAMSIZ,R4               ;GET THE RAM SIZE
010714  013702  011020                  MOV     RAMHLD,R2               ;GET THE STARTING RAM ADDRESS
010720  060204                          ADD     R2,R4                   ;CALCULATE THE END ADDRESS
010722  162704  000001                  SUB     #1,R4                   ;CORRECT VALUE OF PRINTOUT
010726                                  PRINTX  #RAMIOP,R2,R4           ;RAM ADDRESS = 10 - 17, ETC.
010726  010446                          MOV     R4,-(SP)
010730  010246                          MOV     R2,-(SP)
010732  012746  011024                  MOV     #RAMIOP,-(SP)
010736  012746  000003                  MOV     #3,-(SP)
010742  010600                          MOV     SP,R0
010744  104415                          TRAP    C$PNTX
010746  062706  000010                  ADD     #10,SP
010752  012701  002206                  MOV     #RAMDATA,R1             ;ADDRESS OF WHERE RAM DATA IS
010756  013703  002246                  MOV     RAMSIZ,R3               ;THE SIZE OF THE RAM FIELD READ
010762  005004          30$:    CLR     R4                              ;NO EXTRA DATA LEFT OVER
010764  112104                  MOVB    (R1)+,R4                        ;PICK UP BYTE OF RAM DATA
010766  042704  177400                  BIC     #177400,R4              ;GET RID OF SIGN EXTEND
010772                                  PRINTX  #RAMPD,R4               ;"010 211 111 222 377 000 123 134 ETC."
010772  010446                          MOV     R4,-(SP)
010774  012746  011075                  MOV     #RAMPD,-(SP)
011000  012746  000002                  MOV     #2,-(SP)
011004  010600                          MOV     SP,R0
011006  104415                          TRAP    C$PNTX
011010  062706  000006                  ADD     #6,SP
011014  077316                          SOB     R3,30$                  ;LOOP UNTIL ALL PRINTED
011016  000207          50$:    RTS     PC                              ;RETURN
011020  000000          RAMHLD: .WORD   0                               ;RAM ADDR HOLDER 1ST ADDRESS
011022  000000          RAMR5H: .WORD   0                               ;HOLDS R5 FOR LATER
011024      045     116     045 RAMIOP: .ASCIZ  '%N%A Ram Address (Octal) = %03%A - %03%N'
011075      045     101     040 RAMPD:  .ASCIZ  '%A %03%A '
                                        .EVEN
```

```
                                        .SBTTL  CKRAM2  - COMPARE RAM TO I/O CHARACTERISTICS DATA
                                ;+
                                ;
                                ;ROUTINE TO READ THE FIRST 8 OR 10 BYTES FROM RAM
                                ;MEMORY AND COMPARE THIS DATA TO A CHARACTERISTICS DATA BLOCK.
                                ;
                                ;INPUT:
                                ;
                                ;       R4      ADDRESS OF THE CHARACTERISTICS DATA
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - RAM MATCHES PACKET
                                ;               CLR - RAM DOES NOT MATCH PACKET
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       THE TABLE RAMDATA IS FILLED WITH THE
                                ;       DATA HELD IN RAM.
                                ;       RAMSIZ IS SET TO 8. OR 10. FOR PRAMPKT ROUTINE
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;
                                ;-
                                CKRAM2::
011110                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
011110  012701  002206                   MOV     #RAMDATA,R1     ;ADDRESS TO SAVE THE RAM DATA
011114  012702  000167                   MOV     #RMCHBEG,R2     ;BYTE ADDRESS OF FIRST RAM DATA
011120  005003                           CLR     R3              ;CLEAR THE ERROR FLAG
011122  004737  017234                   JSR     PC,CHKTSSR      ;WAIT FOR SSR
011126  004737  017234           10$:    JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
011132  110265  177777                   MOVB    R2,TSDBH(R5)    ;SELECT NEXT RAM ADDRESS
011136  004737  017234                   JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
011142  116511  177776                   MOVB    TSBAL(R5),(R1)  ;READ THE RAM DATA
011146  122124                           CMPB    (R1)+,(R4)+     ;COMPARE TO EXPECTED
011150  001401                           BEQ     20$             ;BRANCH IF OK
011152  005203                           INC     R3              ;SET ERROR FLAG
011154  005202                   20$:    INC     R2              ;ADDRESS OF NEXT RAM LOCATION
011156  012737  000010  002246           MOV     #8.,RAMSIZ      ;ASSUME NORMAL NOT SET
011164  020227  000176                   CMP     R2,#RMCHEND-2   ;REACHED END YET ?
011170  003756                           BLE     10$             ;BRANCH TILL ALL READ
011172  005703                   27$:    TST     R3              ;WAS AN ERROR FOUND ?
011174  001402                           BEQ     30$             ;BRANCH IF NOT
011176  000241                           CLC                     ;CLEAR CARRY TO SHOW ERROR
011200  000401                           BR      50$             ;AND EXIT
011202  000261                   30$:    SEC                     ;SHOW GOOD COMPARE
011204  000207                   50$:    RTS     PC              ;RETURN
```

```
                                        .SBTTL  CKMSG   - COMPARE WRITE CHAR. MESSAGE BUFFERS
                                ;+
                                ;
                                ;ROUTINE TO COMPARE A WRITE CHARACTERISTICS EXPD AND RECV
                                ;BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
                                ;ERROR PRINT ROUTINES.
                                ;
                                ;INPUT:
                                ;
                                ;       R0      RECV MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       R1      RECV MESSAGE BUFFER LOW ORDER ADDRESS
                                ;       R2      EXPD MESSAGE BUFFER ADDRESS
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - MESSAGE BUFFERS MATCH
                                ;               CLR -MESSAGE BUFFERS DON'T MATCH
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       EXPMSG          BUFFER IS SET TO EXPD DATA
                                ;       RECMSG          BUFFER IS SET TO RECV DATA
                                ;       RCVHIADD        SET TO HIGH ORDER ADDRESS OF RECV
                                ;       RCVLOADD        SET TO LOW ORDER ADDRESS OF RECV
                                ;
                                ;-
011212                          CKMSG::
011212                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011216  010037  002250                  MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011222  010137  002252                  MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011226  005737  003102                  TST     KTENABLE                ;TESTING ABOVE 28K?
011232  001403                          BEQ     10$                     ;BR IF NO
011234  004737  020266                  JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011240  010001                          MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011242  005004                  10$:    CLR     R4                      ;WORD IN BUFFER
011244  005003                          CLR     R3                      ;CLEAR ERROR SEEN FLAG
011246  010205                          MOV     R2,R5                   ;GET EXPD BUFFER ADDRESS
011250  011264  002266          15$:    MOV     (R2),EXPMSG(R4)         ;SAVE EXPD FOR ERROR REPORT
011254  011164  002432                  MOV     (R1),RECMSG(R4)         ;SAVE RECV FOR ERROR REPORT
011260  022221                          CMP     (R2)+,(R1)+             ;EXPD EQUAL RECV?
011262  001401                          BEQ     25$                     ;BR IF YES
011264  005203                          INC     R3                      ;SET ERROR SEEN FLAG
011266  062704  000002          25$:    ADD     #2,R4                   ;POINT TO NEXT WORD ADDRESS
011272  020427  000014                  CMP     R4,#14                  ;DONE FIRST 7 WORDS?
011276  003764                          BLE     15$                     ;BR IF NO
011300  032765  000200  000012          BIT     #X2.EXTF,XST2(R5)       ;IS EXTENDED FEATURES SET IN EXPD?
011306  001403                          BEQ     50$                     ;BR IF NO
011310  020427  000016                  CMP     R4,#16                  ;DONE EXTENDED FEATURES WORD?
011314  003755                          BLE     15$                     ;BR IF NO
011316  005703                  50$:    TST     R3                      ;ANY ERRORS SEEN?
011320  001402                          BEQ     55$                     ;BR IF NO
011322  000241                          CLC                             ;SET FAILURE
011324  000401                          BR      60$                     ;
011326  000261                  55$:    SEC                             ;SET SUCCESS
011330  000207                  60$:    RTS     PC                      ;RETURN
```

```
                                        .SBTTL  CKMSG2  - COMPARE EXPD RECV MESSAGE BUFFERS
                                ;+
                                ;
                                ;ROUTINE TO COMPARE AN EXPECTED AND RECEIVED MESSAGE
                                ;BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
                                ;ERROR PRINT ROUTINES.
                                ;
                                ;INPUT:
                                ;
                                ;       R0      RECV MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       R1      RECV MESSAGE BUFFER LOW ORDER ADDRESS
                                ;       R2      EXPD MESSAGE BUFFER ADDRESS
                                ;       R3      NUMBER OF BYTES TO COMPARE
                                ;
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - MESSAGE BUFFERS MATCH
                                ;               CLR - MESSAGE BUFFERS DON'T MATCH
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       EXPMSG          BUFFER IS SET TO EXPD DATA
                                ;       RECMSG          BUFFER IS SET TO RECV DATA
                                ;       RCVHIADD        SET TO HIGH ORDER ADDRESS OF RECV
                                ;       RCVLOADD        SET TO LOW ORDER ADDRESS OF RECV
                                ;
                                ;-
011332                          CKMSG2::
011332                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011336  020327  000144                  CMP     R3,#RECMSG-EXPMSG;@@D IS COUNT ABOVE MAX ALLOWED?
011342  003412                          BLE     5$                      ;@@D BR IF NO
011344  012703  000144                  MOV     #RECMSG-EXPMSG,R3;@@D
011350                                  PRINTF  #DEBUGMSG               ;@@D
011350  012746  011464                  MOV     #DEBUGMSG,-(SP)
011354  012746  000001                  MOV     #1,-(SP)
011360  010600                          MOV     SP,R0
011362  104417                          TRAP    C$PNTF
011364  062706  000004                  ADD     #4,SP
011370  010037  002250          5$:     MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011374  010137  002252                  MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011400  005737  003102                  TST     KTENABLE                ;TESTING ABOVE 28K?
011404  001403                          BEQ     10$                     ;BR IF NO
011406  004737  020266                  JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011412  010001                          MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011414  005004          10$:    CLR     R4                      ;WORD IN BUFFER
011416  005005                  CLR     R5                      ;CLEAR ERROR SEEN FLAG
011420  111264  002266          15$:    MOVB    (R2),EXPMSG(R4) ;SAVE EXPD FOR ERROR REPORT
011424  111164  002432                  MOVB    (R1),RECMSG(R4) ;SAVE RECV FOR ERROR REPORT
011430  122221                          CMPB    (R2)+,(R1)+     ;EXPD EQUAL RECV?
011432  001401                          BEQ     25$             ;BR IF YES
011434  005205                          INC     R5              ;SET ERROR SEEN FLAG
011436  062704  000001          25$:    ADD     #1,R4           ;POINT TO NEXT BYTE
011442  020403                          CMP     R4,R3           ;DONE ALL BYTES?
011444  002001                          BGE     50$             ;BR IF YES
011446  000764                          BR      15$             ;DO NEXT BYTE
011450  005705          50$:    TST     R5              ;ANY ERRORS SEEN?
011452  001402                  BEQ     55$             ;BR IF NO
```

```
2269 011454  000241                        CLC                     ;SET FAILURE
2270 011456  000401                        BR      60$             ;
2271 011460  000261                55$:    SEC                     ;SET SUCCESS
2272 011462  000207                60$:    RTS     PC              ;RETURN
2273
2274 011464      120     122     117  DEBUGMSG:      .ASCIZ  'PROGRAM INTERNAL ERROR -CKMSG2 MESSAGE BUFFER EXCEEDED-';add
2275 011554      045     116     045  FERCM:  .ASCII  /%N%A  ***/
2276 011565      040     040     124  ERCM:   .ASCIZ  /  TSSR ERROR CODE REC'D = /
2277 011620      056     056     056  SIMSG:  .ASCIZ  /.... AFTER DOING SOFT INIT/
2278 011653      124     105     123  TINERR: .ASCIZ  /TEST: .../
2279                                    .EVEN
```

```
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO FATAL SOFT INIT FRRORS
                                        ;
                                        ;INPUT:
                                        ;
                                        ;       R1      CONTENTS OF TSSR AT ERROR
                                        ;
                                        ;SIDE EFFECTS:
                                        ;
                                        ;       EXECUTES DROP UNIT TO CEASE TESTING
                                        ;
                                        ;-
                                        
011666                                          BGNMSG  SFIMSG
011666                                  SFIMSG::
011666  004737  005264                          JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
011672  004737  020152                          JSR     PC,CKDROP       ;DROP UNIT, IF ALLOWED
011676                                          ENDMSG
011676                                  L10003:
011676  104423                                  TRAP    C$MSG

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

011700                                          BGNMSG  PKTSSR
011700                                  PKTSSR::
011700  004737  005264                          JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
011704  012700  000004                          MOV     #4,R0           ;NO. OF WORDS IN PACKET
011710  004737  007072                          JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
011714  013700  002716                          MOV     MESBFA,R0       ;ADDRESS OF MESSAGE BUFFER
011720  005001                                  CLR     R1              ;ASSUME NO HIGH MEMORY
011722  004737  014062                          JSR     PC,PRMESS       ;PRINT THE MESSAGE BUFFER ALSO
011726                                          ENDMSG
011726                                  L10004:
011726  104423                                  TRAP    C$MSG

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

```
CZTUYA0 T480 FRONT END PRT C    MACRO M1200  29-MAR-83 13:43  PAGE 38-1
CKMSG2  - COMPARE EXPD RECV MESSAGE BUFFERS

 2332
 2333 011730                            BGNMSG  PKTGETS
      011730                       PKTGETS::
 2334 011730  004737  005264              JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF ISSR REGISTER
 2335 011734  012700  000002              MOV     #2,R0           ;NO. OF WORDS IN GET STATUS PACKET
 2336 011740  004737  007072              JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
 2337 011744                            ENDMSG
      011744                       L10005:
      011744  104423                    TRAP    C$MSG
 2338
 2339
 2340                                ;+
 2341                                ;PRINT TSSR ERRORS FOR INITIALIZATION TESTS
 2342                                ;
 2343                                ;INPUTS:
 2344                                ;
 2345                                ;       R1      TSSR CONTENTS
 2346                                ;       R4      ADDRESS OF COMMAND PACKET
 2347                                ;-
 2348
 2349 011746                            BGNMSG  SFFMSG
      011746                       SFFMSG::
 2350 011746  004737  005264              JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
 2351 011752                            ENDMSG
      011752                       L10006:
      011752  104423                    TRAP    C$MSG
 2352
 2353
 2354                                        .SBTTL  PKTMES  - PRINT TSSR AND MESSAGE BUFFER
 2355                                ;+
 2356                                ;
 2357                                ;PRINT ROUTINE TO PRINT THE CONTENTS OF TSSR AND MESSAGE
 2358                                ;BUFFER FOR ERROR REPORTS
 2359                                ;
 2360                                ;INPUTS:
 2361                                ;
 2362                                ;       R1      CONTENTS OF TSSR
 2363                                ;       R2      LOW ORDER MESSAGE BUFFER
 2364                                ;       R3      HIGH ORDER MESSAGE BUFFER ADDRESS
 2365                                ;       NOTE: R3 IS IGNORED IF KTENABLE FLAG IS CLEAR
 2366                                ;-
 2367 011754                            BGNMSG  PKTMES
      011754                       PKTMES::
 2368 011754  004737  005264              JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR
 2369 011760  010200                      MOV     R2,R0           ;LOW ORDER ADDRESS
 2370 011762  010301                      MOV     R3,R1           ;HIGH ORDER ADDRESS
 2371 011764  004737  014062              JSR     PC,PRMESS       ;PRINT THE MESSAGE BUFFER
 2372 011770                            ENDMSG
      011770                       L10007:
      011770  104423                    TRAP    C$MSG
 2373
```

```
                                        .SBTTL  ADDSSR  - PRINT TEST ADDRESS AND TSSR
                                ;+
                                ;PRINT ROUTINE TO PRINT THE CONTENTS OF
                                ;TSSR AND A MEMORY TEST ADDRESS
                                ;
                                ;INPUTS:
                                ;
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;       ERRHI   HIGH ORDER MEMORY TEST ADDRESS
                                ;       ERRLO   LOW ORDER MEMORY TEST ADDRESS
                                ;-
                                        BGNMSG  ADDSSR
011772                          ADDSSR::
011772
011772  004737  010026                  JSR     PC,PRITADD      ;PRINT MEMORY TEST ADDRESS
011776  016501  000000                  MOV     TSSR(R5),R1     ;GET CURRENT TSSR
012002  004737  005264                  JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
012006                                  ENDMSG
012006                          L10010:
012006  104423                          TRAP    C$MSG


                                        .SBTTL  MSGEXP - PRINT WRITE CHAR. EXPD-RECV MESSAGE BUFFERS
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT WRITE CHARACTERISTIC MESSAGE BUFFER
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
                                        BGNMSG  MSGEXP
012010                          MSGEXP::
012010
012010  012700  000007                  MOV     #7,R0           ;ASSUME NO EXT FEATURES
012014  004737  015422          5$:     JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012020                                  ENDMSG
012020                          L10011:
012020  104423                          TRAP    C$MSG
```

```
                                        .SBTTL  FIFEXP  - PRINT FIFO EXP/RECV DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT FIFO EXP/RECV DATA
                                ;
                                ;       R1      - BYTE COUNT
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY)
                                ;-
                                        BGNMSG  FIFEXP
012022                          FIFEXP::
012022                                  PRINTX  #FIF1MSG,R1     ;PRINT BYTES TRANSFERRED
012022  010146                          MOV     R1,-(SP)
012024  012746  012074                  MOV     #FIF1MSG,-(SP)
012030  012746  000002                  MOV     #2,-(SP)
012034  010600                          MOV     SP,R0
012036  104415                          TRAP    C$PNTX
012040  062706  000006                  ADD     #6,SP
012044                                  PRINTX  #FIF2MSG        ;PRINT HEADER MSG
012044  012746  012143                  MOV     #FIF2MSG,-(SP)
012050  012746  000001                  MOV     #1,-(SP)
012054  010600                          MOV     SP,R0
012056  104415                          TRAP    C$PNTX
012060  062706  000004                  ADD     #4,SP
012064  010100                          MOV     R1,R0           ;GET BYTE COUNT
012066  004737  015772                  JSR     PC,PRBYTEXP     ;PRINT FIFO BYTES IN ERROR
012072                                  ENDMSG
012072                          L10012:
012072  104423                          TRAP    C$MSG
012074     045     116     045  FIF1MSG:        .ASCIZ  '%N%A NUMBER OF BYTES TRANSFERRED = %D2'
012143     045     116     045  FIF2MSG:        .ASCIZ  '%N%A FIFO DATA BYTES IN ERROR:'
                                        .EVEN
```

```
                                        .SBTTL  MSGSTAT - PRINT STATUS HEADER AND MESS'  BUFFERS
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
012202                                  BGNMSG  MSGSTAT
012202                          MSGSTAT::
012202  012701  012244                    MOV     #STATCOD,R1     ;ASCII ADDRESS TABLE
012206  012100                  10$:      MOV     (R1)+,R0        ;DONE ALL MSG LINES?
012210  001410                            BEQ     20$             ;BR IF YES
012212                                    PRINTX  R0              ;PRINT STATUS BIT NAMES
012212  010046                            MOV     R0,-(SP)
012214  012746  000001                    MOV     #1,-(SP)
012220  010600                            MOV     SP,R0
012222  104415                            TRAP    C$PNTX
012224  062706  000004                    ADD     #4,SP
012230  000766                            BR      10$             ;DO ANOTHER MSG LINE
012232  012700  000012            20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
012236  004737  015422                    JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012242                                    ENDMSG
012242                          L10013:
012242  104423                            TRAP    C$MSG

012244  012262  012324  012415  STATCOD:        .WORD   1$,2$,3$,4$,5$,6$,0
012262    045    116    045    1$:.ASCIZ  '%N%A Tape Bus Signals in Word #8:'

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


                                        .SBTTL  MSGLOOP - PRINT LOOPBACK HEADER AND MESSAGE BUFFERS
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
012716                                  BGNMSG  MSGLOOP
```

```
CZTUYA0 TU80 FRONT END PRT C    MACRO M1200  29-MAR-83 13:43  PAGE 41-1
MSGLOOP - PRINT LOOPBACK HEADER AND MESSAGE BUFFERS

      012716                            MSGLOOP::
 2485 012716  012701  012760                    MOV     #LOOPCOD,R1     ;ASCII ADDRESS TABLE
 2486 012722  012100                    10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
 2487 012724  001410                            BEQ     20$             ;BR IF YES
 2488 012726                                    PRINTX  R0              ;PRINT STATUS BIT NAMES
      012726  010046                            MOV     R0,-(SP)
      012730  012746  000001                    MOV     #1,-(SP)
      012734  010600                            MOV     SP,R0
      012736  104415                            TRAP    C$PNTX
      012740  062706  000004                    ADD     #4,SP
 2489 012744  000766                            BR      10$             ;DO ANOTHER MSG LINE
 2490 012746  012700  000012            20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
 2491 012752  004737  015422                    JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
 2492 012756                                    ENDMSG
      012756                            L10014:
      012756  104423                            TRAP    C$MSG
 2493
 2494 012760  013000  013053  013152  LOOPCOD:        .WORD   1$,2$,3$,4$,5$,6$,7$,0
 2495 013000     045     116     045  1$:.ASCIZ  '%N%A Tape Bus Loopback Signals in Word #8:'
 2496 013053     045     116     045  2$:.ASCIZ  '%N%A      PARERR<15>          IRESV2<14>          IRESV1<13>'
 2497 013152     045     116     045  3$:.ASCIZ  '%N%A IHISP=>IEOT<12>   IWRT=>IIDENT<11>   IREV  =>ICER  <10>'
 2498 013251     045     116     045  4$:.ASCIZ  '%N%A IWFM =>IFMK<09>   IEDIT=>IHER <08>   IFAD  =>ISPEED<07>'
 2499 013350     045     116     045  5$:.ASCIZ  '%N%A ITAD0=>IRDY<06>   ITAD1=>IONL <05>   IERASE=>ILDP  <04>'
 2500 013447     045     116     045  6$:.ASCIZ  '%N%A IREW =>IDBY<03>   IRWU =>IRWD <02>   IFEN  =>IFBY  <01>'
 2501 013546     045     116     045  7$:.ASCIZ  '%N%A IGO  =>IFPT<00>'
 2502                                           .EVEN
 2503
```

```
                                        .SBTTL  MSGSUB - PRINT WRITE SUBSYSTEM MESSAGE BUFFER
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
013574                          BGNMSG  MSGSUB
013574                  MSGSUB::
013574  012700  000012          MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
013600  004737  015422          JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
013604                          ENDMSG
013604                  L10015:
013604  104423                  TRAP    C$MSG


                                        .SBTTL  MEMADD - PRINT MEMORY ADDRESS DATA ERROR
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       ERRHI   - MEMORY ERROR HIGH ORDER ADDRESS
                                ;       ERRLO   - MEMORY ERROR LOW ORDER ADDRESS
                                ;       EXP     - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
013606                          BGNMSG  MEMADD
013606                  MEMADD::
013606  004737  007712          JSR     PC,PRIADD       ;PRINT MEMORY ADDRESS IN ERROR
013612  013701  002176          MOV     EXPD,R1         ;GET EXPD DATA
013616  013702  002200          MOV     RECV,R2         ;GET RECEIVED DATA
013622  004737  007474          JSR     PC,PRIXOR       ;PRINT EXPD/RECV
013626                          ENDMSG
013626                  L10016:
013626  104423                  TRAP    C$MSG
```

```
                                        .SBTTL  PRAMPKT - PRINT RAM AND PACKET DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                ;WHEN THE RAM DATA DOES NOT MATCH.
                                ;
                                ;INPUTS:
                                ;
                                ;       R4      POINTER TO COMMAND PACKET
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       RAMDATA         DATA AS READ FROM THE RAM
                                ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       RAMSIZ  SET TO 0
                                ;-
                                ;
013630                          PRAMPKT:
013630                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
013634  012701  002206                   MOV     #RAMDATA,R1             ;DATA FROM THE RAM
013640  005002                          CLR     R2                      ;INIT BYTE NUMBER
013642  122124                  5$:     CMPB    (R1)+,(R4)+             ;COMPARE EXPECTED, RECEIVED
013644  001000                          BNE     7$                      ;BR IF NO MATCH
013646  116105  177777          7$:     MOVB    -1(R1),R5               ;GET RECV RAM DATA
013652  116403  177777                  MOVB    -1(R4),R3               ;GET EXPD PACKET DATA
013656                                  XOR     R5,R3                   ;XOR EXPD/RECV
013666  042703  177400                  BIC     #177400,R3              ;LOW BYTE ONLY
013672  116137  177777  002200          MOVB    -1(R1),RECV             ;GET RECEIVED RAM DATA
013700  116437  177777  002176          MOVB    -1(R4),EXPD             ;GET EXPECTED RAM DATA
013706                                  PRINTB  #RAMASC,R2,RECV,EXPD,R3
013706  010346                          MOV     R3,-(SP)
013710  013746  002176                  MOV     EXPD,-(SP)
013714  013746  002200                  MOV     RECV,-(SP)
013720  010246                          MOV     R2,-(SP)
013722  012746  013776                  MOV     #RAMASC,-(SP)
013726  012746  000005                  MOV     #5,-(SP)
013732  010600                          MOV     SP,R0
013734  104414                          TRAP    C$PNTB
013736  062706  000014                  ADD     #14,SP
013742  005202                  10$:    INC     R2                      ;UPDATE BYTE COUNT
013744  005737  002246                  TST     RAMSIZ                  ;DEFAULT TO 8.?
013750  001404                          BEQ     15$                     ;BR IF YES
013752  020237  002246                  CMP     R2,RAMSIZ               ;DONE ALL BYTES?
013756  003731                          BLE     5$                      ;BR IF NO
013760  000403                          BR      25$                     ;
013762  020227  000010          15$:    CMP     R2,#8.                  ;DONE DEFAULT NUMBER OF BYTES?
013766  002725                  20$:    BLT     5$                      ;BR IF NO
013770  005037  002246          25$:    CLR     RAMSIZ                  ;SET DEFAULT RAMSIZ
013774  000207                          RTS     PC                      ;RETURN
013776     045     116     045  RAMASC: .ASCIZ  '%N%A  BYTE: %D2%A RAM: %O3%A Packet: %O3%A XOR:%O3'
                                        .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
                                ;
                                ;-

014062                          PRMESS:
014062                                  SAVREG                          ;SAVE THE REGISTERS
014066  010537  011022                  MOV     R5,RAMR5H               ;SAVE DEVICE REGISTER POINTER
014072  010005                          MOV     R0,R5                   ;SAVE LOW ORDER ADDRESS
014074  005737  003102                  TST     KTENABLE                ;ADDRESS ABOVE 28K?
014100  001001                          BNE     10$                     ;BR IF YES
014102  005001                          CLR     R1                      ;SET HIGH ORDER ADDRESS TO 0
014104  010103                  10$:    MOV     R1,R3                   ;SAVE HIGH ORDER ADDRESS
014106  006100                          ROL     R0                      ;SHIFT BIT15 TO C BIT
014110  006101                          ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
014112                                  PRINTX  #PROASC,R1,R5           ;PRINT MESSAGE BUFFER ADDRESS
014112  010546                          MOV     R5,-(SP)
014114  010146                          MOV     R1,-(SP)
014116  012746  014713                  MOV     #PROASC,-(SP)
014122  012746  000003                  MOV     #3,-(SP)
014126  010600                          MOV     SP,R0
014130  104415                          TRAP    C$PNTX
014132  062706  000010                  ADD     #10,SP
014136  022715  177777                  CMP     #177777,(R5)            ;MESSAGE BUFFER FULL OF ONES
014142  001010                          BNE     15$                     ;BR IF BUFFER IS PROBABLY OKAY
014144                                  PRINTX  #MESBFN                 ;"MESSAGE BUFFER PROBABLY NOT VALID"
014144  012746  014633                  MOV     #MESBFN,-(SP)
014150  012746  000001                  MOV     #1,-(SP)
014154  010600                          MOV     SP,R0
014156  104415                          TRAP    C$PNTX
014160  062706  000004                  ADD     #4,SP
014164                          15$:    PRINTX  #PR1AS                  ,PRINT HEADER FOR CONTENTS
014164  012746  014760                  MOV     #PR1AS,-(SP)
014170  012746  000001                  MOV     #1,-(SP)
014174  010600                          MOV     SP,R0
014176  104415                          TRAP    C$PNTX
014200  062706  000004                  ADD     #4,SP
014204  005004                          CLR     R4                      ;NUMBER OF THE NEXT WORD
014206  010501                          MOV     R5,R1                   ;COPY LOW ORDER ADDRESS
014210  010300                          MOV     R3,R0                   ;COPY HIGH ORDER ADDRESS
014212  001403                          BEQ     20$                     ;BR IF NOT ABOVE 28K
014214  004737  020266                  JSR     PC,SETMAP               ;SETUP PAR ADDRESS IN KC
014220  010005                          MOV     R0,R5                   ;GET PAR FORMAT ADDRESS ABOVE 28K
014222                          20$:
014222                                  PRINTX  #MESHEA,(R5)+           ;PRINT 'MESSAGE BUFFER HEADER ='
```

```
                014222  012546                          MOV     (R5)+,-(SP)
                014224  012746  015016                  MOV     #MESHEA,-(SP)
                014230  012746  000002                  MOV     #2,-(SP)
                014234  010600                          MOV     SP,R0
                014236  104415                          TRAP    C$PNTX
                014240  062706  000006                  ADD     #6,SP
     2634       014244                                  PRINTX  #DATAFL,(R5)+   ;PRINT 'DATA FIELD LENGTH     ='
                014244  012546                          MOV     (R5)+,-(SP)
                014246  012746  015063                  MOV     #DATAFL,-(SP)
                014252  012746  000002                  MOV     #2,-(SP)
                014256  010600                          MOV     SP,R0
                014260  104415                          TRAP    C$PNTX
                014262  062706  000006                  ADD     #6,SP
     2635       014266                                  PRINTX  #RBPCRA,(R5)+   ;PRINT 'RESIDUAL BYTE COUNTER ='
                014266  012546                          MOV     (R5)+,-(SP)
                014270  012746  015130                  MOV     #RBPCRA,-(SP)
                014274  012746  000002                  MOV     #2,-(SP)
                014300  010600                          MOV     SP,R0
                014302  104415                          TRAP    C$PNTX
                014304  062706  000006                  ADD     #6,SP
     2636       014310                                  PRINTX  #XSOCON,(R5)+   ;PRINT 'XSTAT0 CONTENTS       ='
                014310  012546                          MOV     (R5)+,-(SP)
                014312  012746  015175                  MOV     #XSOCON,-(SP)
                014316  012746  000002                  MOV     #2,-(SP)
                014322  010600                          MOV     SP,R0
                014324  104415                          TRAP    C$PNTX
                014326  062706  000006                  ADD     #6,SP
     2637       014332                                  PRINTX  #XS1CON,(R5)+   ;PRINT 'XSTAT1 CONTENTS       ='
                014332  012546                          MOV     (R5)+,-(SP)
                014334  012746  015242                  MOV     #XS1CON,-(SP)
                014340  012746  000002                  MOV     #2,-(SP)
                014344  010600                          MOV     SP,R0
                014346  104415                          TRAP    C$PNTX
                014350  062706  000006                  ADD     #6,SP
     2638       014354                                  PRINTX  #XS2CON,(R5)+   ;PRINT 'XSTAT2 CONTENTS       ='
                014354  012546                          MOV     (R5)+,-(SP)
                014356  012746  015307                  MOV     #XS2CON,-(SP)
                014362  012746  000002                  MOV     #2,-(SP)
                014366  010600                          MOV     SP,R0
                014370  104415                          TRAP    C$PNTX
                014372  062706  000006                  ADD     #6,SP
     2639       014376                                  PRINTX  #XS3CON,(R5)+   ;PRINT 'XSTAT3 CONTENTS       ='
                014376  012546                          MOV     (R5)+,-(SP)
                014400  012746  015354                  MOV     #XS3CON,-(SP)
                014404  012746  000002                  MOV     #2,-(SP)
                014410  010600                          MOV     SP,R0
                014412  104415                          TRAP    C$PNTX
                014414  062706  000006                  ADD     #6,SP
     2640       014420  022737  000001  002134          CMP     #1,TRANSTST     ;CHECK FOR RAM DUMP REQUIRED
     2641       014426  001402                          BEQ     40$             ;BR, IF DUMP REQUIRED
     2642       014430  000137  014540                  JMP     50$             ;NO DUMP
     2643       014434                          40$:    PRINTX  #RAMFHR
                014434  012746  014542                  MOV     #RAMFHR,-(SP)
                014440  012746  000001                  MOV     #1,-(SP)
                014444  010600                          MOV     SP,R0
                014446  104415                          TRAP    C$PNTX
                014450  062706  000004                  ADD     #4,SP
```

```
 2644 014454  012737  000010  002246          MOV     #8.,RAMSIZ      ;RAM FIELD IS 8 BYTES LONG
 2645 014462  012737  000020  011020          MOV     #20,RAMHLD      ;FIELD STARTS AT 20 OCTAL (10 HEX)
 2646 014470  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
 2647 014474  012737  000040  011020          MOV     #40,RAMHLD      ;FIELD STARTS AT 40 OCTAL (20 HEX)
 2648 014502  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
 2649 014506  012737  000060  011020          MOV     #60,RAMHLD      ;FIELD STARTS AT 60 OCTAL (30 HEX)
 2650 014514  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
 2651 014520  012737  000020  002246          MOV     #16.,RAMSIZ     ;RAM FIELD IS SIXTEEN BYTES LONG
 2652 014526  012737  000100  011020          MOV     #100,RAMHLD     ;FIELD STARTS AT 100 OCTAL (40 HEX)
 2653 014534  004737  010636                  JSR     PC,RAMER        ;READ AND PRINT THEM
 2654 014540  000207                  50$:    RTS     PC              ;RETURN
 2655 014542     045     116     045  RAMFHR: .ASCIZ  '%N%A ********** SPECIAL M7454 RAM MEMORY DUMP **********'
 2656 014633     045     116     045  MESBFN: .ASCIZ  '%N%A MESSAGE BUFFER CONTENTS PROBABLY NOT VALID'
 2657 014713     045     116     045  PR0ASC: .ASCIZ  '%N%A Message Buffer Address = %01%05'
 2658 014760     045     116     045  PR1ASC: .ASCIZ  '%N%A Message Buffer Contents:'
 2659
 2660 015016     045     116     045  MESHEA: .ASCIZ  '%N%A Message Buffer Header     = %06'
 2661 015063     045     116     045  DATAFL: .ASCIZ  '%N%A Data Field Length         = %06'
 2662 015130     045     116     045  PBPCRA: .ASCIZ  '%N%A Residual Byte Counter     = %06'
 2663 015175     045     116     045  XS0CON: .ASCIZ  '%N%A XSTAT0 Contents           = %06'
 2664 015242     045     116     045  XS1CON: .ASCIZ  '%N%A XSTAT1 Contents           = %06'
 2665 015307     045     116     045  XS2CON: .ASCIZ  '%N%A XSTAT2 Contents           = %06'
 2666 015354     045     116     045  XS3CON: .ASCIZ  '%N%A XSTAT3 Contents           = %06'
 2667                                  .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
                                ;-
015422                          PRMSGEXP::
015422                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
015426  010005                          MOV     R0,R5           ;SAVE NUMBER OF WORDS
015430  013700  002252                  MOV     RCVLOADD,R0     ;GET RECV LOW ADDRESS
015434  010004                          MOV     R0,R4           ;COPY LOW ADDRESS
015436  013701  002250                  MOV     RCVHIADD,R1     ;GET RECV HIGH ADDRESS
015442  006100                          ROL     R0              ;SHIFT BIT15 TO C BIT
015444  006101                          ROL     R1              ;SHIFT TO HIGH ORDER FOR PRINTOUT
015446                                  PRINTX  #PRMSG0,R1,R4   ;PRINT MESSAGE BUFFER ADDRESS
015446  010446                          MOV     R4,-(SP)
015450  010146                          MOV     R1,-(SP)
015452  012746  015602                  MOV     #PRMSG0,-(SP)
015456  012746  000003                  MOV     #3,-(SP)
015462  010600                          MOV     SP,R0
015464  104415                          TRAP    C$PNTX
015466  062706  000010                  ADD     #10,SP
015472                                  PRINTX  #PRMSG1         ;PRINT HEADER FOR CONTENTS
015472  012746  015647                  MOV     #PRMSG1,-(SP)
015476  012746  000001                  MOV     #1,-(SP)
015502  010600                          MOV     SP,R0
015504  104415                          TRAP    C$PNTX
015506  062706  000004                  ADD     #4,SP
015512  005004                          CLR     R4              ;NUMBER OF THE CURRENT WORD
015514  012701  002266                  MOV     #EXPMSG,R1      ;GET EXPD BUFFER ADDRESS
015520  012702  002432                  MOV     #RECMSG,R2      ;GET RECV BUFFER ADDRESS
015524  011100                  20$:    MOV     (R1),R0         ;GET EXPD
015526  011203                          MOV     (R2),R3         ;GET RECV
015530                                  XOR     R0,R3           ;XOR EXPD/RECV
015540                                  PRINTX  #PRMSG2,R4,(R1)+,(R2)+,R3
015540  010346                          MOV     R3,-(SP)
015542  012246                          MOV     (R2)+,-(SP)
015544  012146                          MOV     (R1)+,-(SP)
015546  010446                          MOV     R4,-(SP)
015550  012746  015705                  MOV     #PRMSG2,-(SP)
015554  012746  000005                  MOV     #5,-(SP)
015560  010600                          MOV     SP,R0
015562  104415                          TRAP    C$PNTX
015564  062706  000014                  ADD     #14,SP
015570  005204                          INC     R4              ;NUMBER OF THE NEXT
015572  020405                          CMP     R4,R5           ;DONE ALL YET?
015574  002001                          BGE     50$             ;BR IF YES
015576  000752                          BR      20$             ;DO ANOTHER
015600  000207                  50$:    RTS     PC              ;RETURN
015602     045     116     045  PRMSG0: .ASCIZ  '%N%A Message Buffer Address = %01%05'
015647     045     116     045  PRMSG1: .ASCIZ  '%N%A Message Buffer Contents:'
015705     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
                                ;-
015772                          PRBYTEXP::
015772                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
015776  010005                          MOV     R0,R5                   ;SAVE NUMBER OF BYTES
016000  005037  002264                  CLR     PRMNO                   ;INIT ERROR COUNT
016004  005004                          CLR     R4                      ;NUMBER OF THE CURRENT BYTE
016006  012701  002266                  MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
016012  012702  002432                  MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
016016  111100                  20$:    MOVB    (R1),R0                 ;GET EXPD BYTE
016020  042700  177400                  BIC     #^C<377>,R0             ;CLEAR UPPER BYTE
016024  110037  016340                  MOVB    R0,PRBEXP               ;SAVE FOR ERROR REPORT
016030  111203                          MOVB    (R2),R3                 ;GET RECV BYTE
016032  042703  177400                  BIC     #^C<377>,R3             ;CLEAR UPPER BYTE
016036  110337  016342                  MOVB    R3,PRBREC               ;FOR ERROR REPORT
016042                                  XOR     R0,R3                   ;XOR EXPD/RECV
016052  122122                          CMPB    (R1)+,(R2)+             ;EXPD = RECV?
016054  001431                          BEQ     30$                     ;BR IF YES
016056  005237  002264                  INC     PRMNO                   ;UPDATE ERROR COUNT
016062  023727  002264  000010          CMP     PRMNO,#8.               ;PRINTED 8?
016070  101023                          BHI     30$                     ;BR IF YES
016072                          27$:    PRINTX  #PRBMSG,R4,PRBEXP,PRBREC,R3
016072  010346                          MOV     R3,-(SP)
016074  013746  016342                  MOV     PRBREC,-(SP)
016100  013746  016340                  MOV     PRBEXP,-(SP)
016104  010446                          MOV     R4,-(SP)
016106  012746  016206                  MOV     #PRBMSG,-(SP)
016112  012746  000005                  MOV     #5,-(SP)
016116  010600                          MOV     SP,R0
016120  104415                          TRAP    C$PNTX
016122  062706  000014                  ADD     #14,SP
016126                                  FORCEXIT        50$             ;aad
016136  000404                          BR      35$                     ;aad
016140                          30$:
016140                                  FORCERROR  27$,NOTSSR           ;aad
016150                          35$:                                    ;aad
016150  005204                          INC     R4                      ;NUMBER OF THE NEXT
016152  020405                          CMP     R4,R5                   ;DONE ALL YET?
016154  002001                          BGE     50$                     ;BR IF YES
016156  000717                          BR      20$                     ;DO ANOTHER
016160                          50$:    PRINTX  #PRBTOT,PRMNO           ;PRINT TOTAL ERROR COUNT
016160  013746  002264                  MOV     PRMNO,-(SP)
016164  012746  016273                  MOV     #PRBTOT,-(SP)
016170  012746  000002                  MOV     #2,-(SP)
016174  010600                          MOV     SP,R0
016176  104415                          TRAP    C$PNTX
```

```
        016200  062706  000006                  ADD     #6,SP
   2749 016204  000207                          RTS     PC              ;RETURN
   2750
   2751 016206     045     116     045  PRBMSG: .ASCIZ  '%N%A   BYTE #%D2%A  EXPD: %O3%A  RECV: %O3%A  XOR: %O3'
   2752 016273     045     116     045  PRBTOT: .ASCIZ  '%N%A NUMBER OF BYTES IN ERROR = %D2'
   2753                                         .EVEN
   2754 016340  000000                  PRBEXP: .WORD   0               ;EXPD
   2755 016342  000000                  PRBREC: .WORD   0               ;RECV
   2756
   2757                                 ;+
   2758                                 ;
   2759                                 ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
   2760                                 ;
   2761                                 ;INPUTS:
   2762                                 ;
   2763                                 ;       R1      RECEIVED DATA
   2764                                 ;       R2      EXPECTED DATA
   2765                                 ;
   2766                                 ;-
   2767
   2768 016344                                  BGNMSG  EXPREC
        016344                          EXPREC::
   2769 016344  004737  007474                  JSR     PC,PRIXOR       ;PRINT THE DATA
   2770 016350                                  ENDMSG
        016350                          L10017:
        016350  104423                          TRAP    C$MSG
   2771
   2772
```

```
                                        .SBTTL  EXPBREC - PRINT EXPD/RECV BYTE DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY BYTE EXPD/RECV DATA
                                ;
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA BYTE
                                ;       R2      EXPECTED DATA BYTE
                                ;
                                ;-
                                ;
016352                          BGNMSG  EXPBREC
016352                  EXPBREC::
016352  004737  007344          JSR     PC,PRIBXOR      ;PRINT THE DATA
016356                          ENDMSG
016356                  L10020:
016356  104423                  TRAP    C$MSG
                                ;
                                ;
                                ;
                                ;
                                        .SBTTL  RAMERR  - PRINT RAM AND PACKET DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                ;
                                ;INPUTS:
                                ;
                                ;       R4      POINTER TO COMMAND PACKET
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       RAMDATA         DATA AS READ FROM THE RAM
                                ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       RAMSIZ  SET TO 0
                                ;-
                                ;
016360                          BGNMSG  RAMERR
016360                  RAMERR::
016360  004737  013630          JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
016364                          ENDMSG
016364                  L10021:
016364  104423                  TRAP    C$MSG
                                ;
                                ;
                                        .SBTTL  RAMTADD - PRINT TEST ADDRESS, RAM AND PACKET DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                ;
                                ;INPUTS:
```

```
                                ;
                                ;       R4      POINTER TO COMMAND PACKET
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       RAMDATA         DATA AS READ FROM THE RAM
                                ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                ;       ERRHI           HIGH ORDER TEST ADDRESS
                                ;       ERRLO           LOW ORDER TEST ADDRESS
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       RAMSIZ  SET TO 0
                                ;-
                                ;
                                        BGNMSG  RAMTADD
016366                          RAMTADD::
016366
016366  004737  010026                  JSR     PC,PRITADD      ;PRINT TEST ADDRESS
016372  004737  013630                  JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
016376                                  ENDMSG
016376                          L10022:
016376  104423                          TRAP    C$MSG
                                ;
                                ;
                                        .SBTTL  RAMEXP  - PRINT RAM EXPD/RECV DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
                                ;       R4      CONTROLLER RAM ADDRESS
                                ;-
                                ;
                                        BGNMSG  RAMEXP
016400                          RAMEXP::
016400
016400  042701  177400                  BIC     #^C<377>,R1     ;SAVE EXPD RAM DATA BYTE
016404  042702  177400                  BIC     #^C<377>,R2     ;SAVE EXPD RAM DATA BYTE
016410  004737  007620                  JSR     PC,PRIRAM       ;PRINT THE RAM ADDRESS
016414  004737  007474                  JSR     PC,PRIXOR       ;PRINT THE DATA
016420                                  ENDMSG
016420                          L10023:
016420  104423                          TRAP    C$MSG
                                ;
                                ;
                                        .SBTTL  TIMEXP  - PRINT TIMER A,B AND EXP/REC
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                ;AND TIMER A,B HEADER MESSAGE
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
```

```
 2876                                   ;-
 2877
 2878 016422                                    BGNMSG  TIMEXP
      016422                            TIMEXP::
 2879 016422                                    PRINTX  #TIMSG0         ;PRINT HEADER
      016422  012746  016450                    MOV     #TIMSG0,-(SP)
      016426  012746  000001                    MOV     #1,-(SP)
      016432  010600                            MOV     SP,R0
      016434  104415                            TRAP    C$PNTX
      016436  062706  000004                    ADD     #4,SP
 2880 016442  004737  007474                    JSR     PC,PRIXOR       ;PRINT THE DATA
 2881 016446                                    ENDMSG
      016446                            L10024:
      016446  104423                            TRAP    C$MSG
 2882
 2883
 2884 016450     045     116     045  TIMSG0: .ASCIZ  '%N%A TIMER A STATUS IS IN BIT 3%N%A TIMER B STATUS IS IN BIT 2'
 2885                                   .EVEN
```

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

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

                                        BGNMSG  BADSSR
016550                          BADSSR::
016550  010246                          MOV     R2,-(SP)        ;SAVE DATA TRANSFERRED
016552  042702  177400                  BIC     #177400,R2      ;GET JUST ONE BYTE
016556                                  PRINTB  #XFERASC,R2
016556  010246                          MOV     R2,-(SP)
016560  012746  016610                  MOV     #XFERASC,-(SP)
016564  012746  000002                  MOV     #2,-(SP)
016570  010600                          MOV     SP,R0
016572  104414                          TRAP    C$PNTB
016574  062706  000006                  ADD     #6,SP
016600  012602                          MOV     (SP)+,R2        ;RESTORE R2
016602  004737  005264                  JSR     PC,PRITSR       ;DECODE TSSR CONTENTS
016606                                  ENDMSG
016606                          L10025:
016606  104423                          TRAP    C$MSG
016610     045     116     045  XFERASC:        .ASCIZ  '%N%A Data Transferred = %03'
```

```
                                        .SBTTL  SOFINIT - SOFT INITIALIZE OF CONTROLLER

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

016644                          SOFINIT::
0 6644                                  SAVREG                  ; SAVE THE REGISTERS
016650  012765  000000  000000          MOV     #0,TSSR(R5)     ; DO THE INIT.
016656  004737  017120                  JSR     PC,WAITF        ; WAIT FOR SSR
016662  016500  000000                  MOV     TSSR(R5),R0     ;GET THE TSSR REGISTER
016666  010004                          MOV     R0,R4           ;TSSR CONTENTS
016670  042704  176277                  BIC     #^C<HIADDR!OFL>,R4
016674  052704  002200                  BIS     #SSR!NBA,R4     ;R4 HAS EXPECTED CONTENTS
016700  020400                          CMP     R4,R0           ;ONLY EXPECTED BITS SET ?
016702  001402                          BEQ     5$              ;BRANCH IF OKAY
016704  000241                          CLC                     ;CLEAR THE CARRY FOR ERROR
016706  000401                          BR      10$             ;GO TO EXIT
016710  000261                  5$:     SEC                     ;SET THE CARRY BIT
016712  000207                  10$:    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
                                ;
                                ;-

016714                          CHKAMB:
016714                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
016720  010004                        MOV     R0,R4           ;CONTENTS OF TSSR
016722  032700  100000                BIT     #SC,R0          ;IS BIT 15 SET ?
016726  001004                        BNE     5$              ;BRANCH IF YES
016730  032700  174077                BIT     #^C<NBA!OFL!SSR!HIADDR>,R0      ;ANY OTHER BITS SET ?
016734  001023                        BNE     40$             ;MUST BE AN ERROR
016736  000424                        BR      45$             ;RETURN WITH SUCCESS
016740  032700  000200        5$:     BIT     #SSR,R0         ;IS READY BIT SET ?
016744  001011                        BNE     10$             ;BRANCH IF READY BIT IS SET.
016746  032700  000040                BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016752  001414                        BEQ     40$             ;ERROR IF NOT
016754  042704  177761                BIC     #^CTERCLS,R4    ;CLEAR ALL BUT TERMINATION CODE
016760  020427  000016                CMP     R4,#16          ;ALL THREE BITS MUST BE SET
016764  001007                        BNE     40$             ;ERROR IF NOT SET
016766  000410                        BR      45$             ;OK IF ALL ARE SET
016770  032700  000040        10$:    BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016774  001405                        BEQ     45$             ;ERROR IF BIT IS SET WITH SSR
016776  032700  000006                BIT     #BIT2!BIT1,R0   ;IS THIS A FUNCTION REJECT
017002  001002                        BNE     45$             ;BR, IF TSSR IS OK
017004  000241                40$:    CLC                     ;AMBIGUOUS CONTENTS
017006  000401                        BR      50$
017010  000261                45$:    SEC                     ;SHOW SUCCESS - NO AMBIGUITY
017012  000207                50$:    RTS     PC              ;RETURN TO CALLER
```

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

                                ; BIT DEFINITIONS FOR "INTMASK" AND "INTFLAG" BYTES:
                                ;
  000200                                IOKCKIN=BIT7            ; DON'T CHECK FOR BAD INTERRUPTS -- TEST WILL.
  000001                                IOKSTP=BIT0             ; EXPECT "STOP" INTERRUPT.
                                ;
                                ;INTERRUPT MASK -- SAYS EXPECTING INTERRUPTS
017014    000                 INTMASK:        .BYTE   0
                                ;INTERRUPT FLAG -- SAYS WE GOT ONE (IF POSITIVE)
017015    000                 INTFLAG:        .BYTE   0

                                ;SAVED INTERRUPT VECTOR:
017016  000000                INTVEC: .WORD   0
                                ;SAVE CPU PC
017020  000000                INTCPC: .WORD   0

                                ;SUBROUTINE TO ENABLE INTERRUPTS:
017022  010046                ENAINT: MOV     R0,-(SP)        ;SAVE R0
017024  013700  002156                MOV     IVEC,R0         ;GET POINTER TO VECTORS
017030  012720  017066                MOV     #INTR,(R0)+     ;SET UP INTERRUPT VECTOR
017034  012720  000340                MOV     #PRI07,(R0)+
017040  012600                        MOV     (SP)+,R0        ;RESTORE R0
017042  011646                        MOV     (SP),-(SP)
017044  012766  000000  0000          MOV     #0,2(SP)        ;SET CPU TO LEVEL 0
017052  000002                        RTI

                                ;SUBROUTINE TO DISABLE INTERRUPTS (RAISE PRIORITY TO LEVEL 7)
017054  011646                DSBINT: MOV     (SP),-(SP)
017056  012766  000340  000002        MOV     #PRI07,2(SP)
017064  000002                        RTI
```

```
                                                .SBTTL  INTR    - INTERRUPT HANDLERS

                                                BGNSRV  INTR            ;DEFINE INTERRUPT ENTRY
017066                                  INTR::
017066  012737  000001  002172                  MOV     #1,INTRECV      ;SET FLAG TO SHOW INTERRUPT RECEIVED
017074  105037  017015                          CLRB    INTFLAG         ;CLEAR FLAG TO SAY WE GOT INTERRUPT
017100  132737  000001  017014                  BITB    #IOKSTP,INTMASK ;EXPECTING STOP INTERRUPT?
017106  001003                                  BNE     1$              ;BR IF YES
017110  152737  000001  017015                  BISB    #IOKSTP,INTFLAG ;NO. SET THE ERROR FLAG.

                                        ;SAVE REGISTERS, MSG BUFFER, ETC.
017116                                  1$:
017116                                          ENDSRV
017116                                  L10026:
017116  000002                                  RTI
```

```
                                        .SBTTL  WAITF   - WAIT FOR SUBSYSTEM READY
                                ;
                                ; SUBROUTINE TO WAIT FOR THE SUBSYSTEM READY FLAG
                                ;
                                ;INPUTS:
                                ;
                                ;       R5      ADDRESS OF FIRST DEVICE REGISTER
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      CONTENTS OF LAST TSSR READ
                                ;       CARRY   SET - READY BIT SET
                                ;               CLR - TIMEOUT WAITING FOR READY
                                ;
017120                          WAITF:: BREAK                   ; DO A SUPVSR BREAK FIRST.
017120  104422                          TRAP    C$BRK
017122  012746  010000                  MOV     #10000,-(SP)    ;BIG MSEC TIMER
017126                                  DELAY   1               ;DELAY 100US
017126  012727  000001                  MOV     #1,(PC)+
017132  000000                          .WORD   0
017134  013727  002116                  MOV     L$DLY,(PC)+
017140  000000                          .WORD   0
017142  005367  177772                  DEC     -6(PC)
017146  001375                          BNE     .-4
017150  005367  177756                  DEC     -22(PC)
017154  001367                          BNE     .-20
017156  016500  000000          2$:     MOV     TSSR(R5),R0     ;READ THE TSSR REGISTER
017162  105700                          TSTB    R0              ;TEST FOR READY BIT SET
                                ;
017164  100420                          BMI     3$              ; EXIT ON STOP FLAG.
017166                                  DELAY   1               ; WAIT 100 USEC
017166  012727  000001                  MOV     #1,(PC)+
017172  000000                          .WORD   0
017174  013727  002116                  MOV     L$DLY,(PC)+
017200  000000                          .WORD   0
017202  005367  177772                  DEC     -6(PC)
017206  001375                          BNE     .-4
017210  005367  177756                  DEC     -22(PC)
017214  001367                          BNE     .-20
017216  005316                          DEC     (SP)            ;REDUCE DELAY COUNT
017220  001356                          BNE     2$              ;RETRY UNTIL TIMER EXPIRES
017222  000241                          CLC                     ; C = 0, CONTROLLER STILL RUNNING...
017224  000401                          BR      4$              ;...OR HUNG-UP AFTER 300 MSEC.
017226  000261                  3$:     SEC                     ; C = 1, CONTROLLER IS STOPPED.
017230  005326                  4$:     DEC     (SP)+           ;RESTORE STACK WITHOUT CHANGING CARRY BIT
017232  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
                                ;
                                ;-

017234                          CHKTSSR:
017234  004737  017120                  JSR     PC,WAITF        ;WAIT FOR READY
017240  103014                          BCC     20$             ;BRANCH IF TIME OUT
017242  004737  016714                  JSR     PC,CHKAMB       ;TSSR AMBIGOUS?
017246  103006                          BCC     10$             ;BR IF YES
017250  032700  100000                  BIT     #SC,R0          ;SPECIAL CONDITION SET?
017254  001405                          BEQ     15$             ;BR IF NO
017256  032700  074000                  BIT     #<SCE!BIE!RMR!NXM>,R0   ;ANY ERROR BITS SET?
017262  001402                          BEQ     15$             ;BR IF NO
017264  000241                  10$:    CLC                     ;SET FAILURE
017266  000401                          BR      20$             ;
017270  000261                  15$:    SEC                     ;SET SUCCESS
017272  000207                  20$:    RTS     PC              ;RETURN TO CALLER
```

```
                                        .SBTTL  XNXM    - CHECK FOR NONEXISTENT MEMORY
                                ;+
                                ; ROUTINE TO TEST FOR A NEXM IN THE RANGE (R1) THRU (R2).
                                ; ON RETURN, IF "C" = 1, (R1) = NEXM ADDRESS.
                                ;            "C" = 0, ALL ADDRESSES OK.
                                ;
                                ;CALL:  MOV ADR1,R1
                                ;       MOV ADR2,R2
                                ;       JSR PC,NXM
                                ;       RETURN                  ;TEST "C" AND PROCEED.
                                ;
017274  012737  017326  000004  XNXM:   MOV     #2$,@#4         ; SET BUSERR VECTOR.
017302  012737  000200  000006          MOV     #PRI04,@#6
017310  005003                          CLR     R3              ;FLAG.
017312  005711                  1$:     TST     (R1)            ;TEST THE ADDRESS(ES).
                                                                ;IF ANY TRAP, CONTINUE AT 2$.
017314  020102                          CMP     R1,R2           ;OTHERWISE, CONTINUE HERE.
017316  001407                          BEQ     3$              ;BR IF FINISHED (NO NEXM'S).
017320  062701  000002                  ADD     #2,R1           ;SET NEXT ADDRESS...
017324  000772                          BR      1$              ;...AND CONTINUE.

017326  005103                  2$:     COM     R3              ;GOT ONE, SET FLAG...
017330  012716  017336                  MOV     #3$,(SP)
017334  000002                          RTI                     ;...AND DISMISS INTERRUPT...
017336                          3$:     CLRVEC  #4              ;...AND GIVE BACK THE VECTOR.
017336  012700  000004                  MOV     #4,R0
017342  104436                          TRAP    C$CVEC
017344  005703                          TST     R3              ;DID WE CATCH ONE ??
017346  001401                          BEQ     .+4             ;NO, "C" = 0, SKIP NEXT.
017350  000261                          SEC                     ;YES, "C" = 1, (R1) = NEXM ADDR.
017352  000207                          RTS     PC


                                        .SBTTL  TSTLOOP - CHECK ITERATION COUNT
                                ;+
                                ; SUBROUTINE TO EXECUTE TEST ITERATIONS.
                                ; EXIT WITH "C" SET IF LOOPS ALLOWED AND LOOP COUNT NON-ZERO.
                                ; LOOP COUNTER IS SET BY "BEGIN.TEST" MACRO.
                                ;
                                ; CALL: LOOPTO  ARG
                                ;
017354                          TSTLOOP::
017354  005737  002136                  TST     NOITS           ; ITERATIONS INHIBITED?
017360  001006                          BNE     1$              ; YES.
017362  005737  002152                  TST     QVP             ; NO.
017366  100403                          BMI     1$              ;LOOPS DISALLOWED IN QUICK PASS.
017370  005337  002164                  DEC     LOOPCNT         ; BUMP LOOP COUNTER.
017374  001002                          BNE     2$
017376  000241                  1$:     CLC                     ;LOOP DISALLOWED, OR DONE.
017400  000401                          BR      3$
017402  000261                  2$:     SEC                     ;LOOP ENABLED.
017404  000207                  3$:     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
                                ;
                                ;-
017406                          TSTSETUP::
017406  010046                          MOV     R0,-(SP)        ;SAVE THE TEST ID MESSAGE
017410  005037  003106                  CLR     SIFLAG          ; CLEAR "SOFT INIT" FLAG
017414  005037  017654                  CLR     ERRK            ; CLEAR LOCAL ERROR COUNTER.
017420  005037  005232                  CLR     EXTA            ; CLEAR ERROR EXTENSION FLAG.
017424  105037  017014                  CLRB    INTMASK         ; CLEAR INTERRUPT MASK (CHECK ERROR)
017430  013700  002150                  MOV     UNITN,R0        ; GET THE UNIT NUMBER,
017434  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
017436  005737  003062                  TST     NODEV           ; DID STARTUP FIND THE DEVICE?
017442  001430                          BEQ     4$              ; BR IF YES
017444  100010                          BPL     3$              ; BR IF NOT IDLE
017446  052760  160000  003130          BIS     #160000,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
017454                                  ERRDF   1,NXR,NXRERR    ; NO DEVICE HERE -- PRINT IT
017454  104455                          TRAP    C$ERDF
017456  000001                          .WORD   1
017460  003636                          .WORD   NXR
017462  005176                          .WORD   NXRERR
017464  000407                          BR      2$
017466  052760  160001  003130  3$:     BIS     #160001,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
017474                                  ERRDF   2,NOINIT        ; DEVICE NOT IDLE
017474  104455                          TRAP    C$ERDF
017476  000002                          .WORD   2
017500  004233                          .WORD   NOINIT
017502  000000                          .WORD   0
017504  012737  177777  003060  2$:     MOV     #-1,DUFLG       ; DROP THE UNIT
017512                                  DODU    UNITN
017512  013700  002150                  MOV     UNITN,R0
017516  104451                          TRAP    C$DODU
017520                                  DOCLN                   ; ABORT THE PASS
```

```
                017520  104444                          TRAP    C$DCLN
3214            017522  000423                          BR      5$
3215
3216            017524                          4$:     RFLAGS  R0              ; GET THE OPERATOR FLAGS.
                017524  104421                          TRAP    C$RFLA
3217            017526  032700  001000                  BIT     #PNT,R0         ; PRINT THE TEST NUMBERS?
3218            017532  001412                          BEQ     1$              ; BR IF NO
3219            017534  011600                          MOV     (SP),R0         ;GET THE ID MESSAGE
3220            017536                                  PRINTF  #TNAM,R0        ;DISPLAY THE TEST ID
                017536  010046                          MOV     R0,-(SP)
                017540  012746  017602                  MOV     #TNAM,-(SP)
                017544  012746  000002                  MOV     #2,-(SP)
                017550  010600                          MOV     SP,R0
                017552  104417                          TRAP    C$PNTF
                017554  062706  000006                  ADD     #6,SP
3221            017560  005237  002162          1$:     INC     TSTCNT          ; BUMP TEST COUNTER.
3222            017564                                  SETPRI  IPRI            ;PRIORITY THAT OF DEVICE
                017564  013700  002160                  MOV     IPRI,R0
                017570  104441                          TRAP    C$SPRI
3223            017572  005726                  5$:     TST     (SP)+           ;FIX UP THE STACK
3224            017574  013705  002154                  MOV     CSRADDR,R5      ; ADDRESS OF TSV REGISTERS ON UNIBUS
3225            017600  000207                          RTS     PC
3226            017602     045     123     045  TNAM:  .ASCIZ  '%S%T%A Test'
3227                                                    .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).
                                ;
017616                          TSTEND: RFLAGS  R0
017616 104421                           TRAP    C$RFLA
017620 030027 020000                    BIT     R0,#IER
017624 001412                           BEQ     1$              ; BR IF "IER" NOT SET.
017626                                  PRINTF  #ESUM,ERRK      ; PRINT ERROR COUNT.
017626 013746 017654                    MOV     ERRK,-(SP)
017632 012746 017656                    MOV     #ESUM,-(SP)
017636 012746 000002                    MOV     #2,-(SP)
017642 010600                           MOV     SP,R0
017644 104417                           TRAP    C$PNTF
017646 062706 000006                    ADD     #6,SP
017652 000207                   1$:     RTS     PC

017654 000000                   ERRK:   0                       ; LOCAL ERROR COUNT.
017656     045     101     040  ESUM:   .ASCIZ  /%A %D%A ERRORS/
017675     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:
                                ;
017742 005237 017654            INCERK: INC     ERRK            ; INCREMENT LOCAL ERROR COUNT
017746 010046                           MOV     R0,-(SP)        ; SAVE R0
017750 013700 002150                    MOV     UNITN,R0        ; GET UNIT NUMBER,
017754 006300                           ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
017756 062700 003130                    ADD     #ERTABL,R0      ; R0 GETS ADDRESS OF ERROR TABLE ENTRY.
017762 005210                           INC     (R0)            ; INCREMENT THE DEVICE ERROR COUNT
017764 032710 007777                    BIT     #7777,(R0)      ; DID WE OVERFLOW THE FIELD?
017770 001001                           BNE     1$              ; BR IF NO.
017772 005310                           DEC     (R0)            ; YES -- BACK IT UP TO 7777.
017774 012600                   1$:     MOV     (SP)+,R0        ; RESTORE R0
017776 000207                           RTS     PC              ; RETURN TO CALLER.

020000 010046                   CKEMAX: MOV     R0,-(SP)        ; SAVE R0
020002 013700 002150                    MOV     UNITN,R0        ; GET UNIT NUMBER
020006 006300                           ASL     R0              ; ... AND MAKE IT A WORD OFFSET
020010 016000 003130                    MOV     ERTABL(R0),R0   ; GET ERROR TABLE ENTRY
020014 042700 170000                    BIC     #170000,R0      ; EXTRACT ERROR COUNT FIELD
020020 020037 002142                    CMP     R0,GERRMAX      ; IS GLOBAL LIMIT EXCEEDED FOR THIS UNIT?
020024 103004                           BHIS    1$              ; BR IF YES
020026 023737 017654 002140             CMP     ERRK,LERRMAX    ; IS LOCAL LIMIT EXCEEDED FOR THIS TEST?
020034 103417                           BLO     2$              ; BR IF NO
020036                          1$:     RFLAGS  R0              ; GET OPERATOR FLAGS
020036 104421                           TRAP    C$RFLA
020040 032700 000040                    BIT     #IDU,R0         ; IS DROPPING INHIBITED?
020044 001013                           BNE     2$              ; BR IF YES.
020046 012737 177777 003060             MOV     #-1,DUFLG       ; NO -- DROP THE UNIT
020054                                  ERRDF   4,EMAXDU
020054 104455                           TRAP    C$ERDF
020056 000004                           .WORD   4
020060 017675                           .WORD   EMAXDU
```

```
CZTUYAO TU80 FRONT END PRT C    MACRO M1200  29-MAR-83 13:43  PAGE 57-1
INCERK  - INCREMENT LOCAL ERROR COUNT

      020062  000000                          .WORD   0
 3275 020064                                  DODU    UNITN
      020064  013700  002150                  MOV     UNITN,R0
      020070  104451                          TRAP    C$DODU
 3276 020072                                  DOCLN
      020072  104444                          TRAP    C$DCLN
 3277 020074  012600                  2$:     MOV     (SP)+,R0        ; RESTORE R0
 3278 020076  000207                          RTS     PC              ; RETURN TO CALLER
 3279                                         .SBTTL  FATCHK - INC FATAL ERRORS AND CHECK FOR LIMIT
 3280                                 ;+
 3281                                 ;
 3282                                 ;       CHECK FATAL COUNTER, AFTER INC, FOR MORE THAN 25
 3283                                 ;       ERRORS AND IF OVER CALL UNIT DROP ROUTINE
 3284                                 ;
 3285                                 ;-
 3286 020100                          FATCHK:
 3287 020100                                  SAVREG                  ;BETTER SAVE THE REGISTERS
 3288 020104  013701  002150                  MOV     UNITN,R1        ;PICK UP THE UNIT NUMBER
 3289 020110  006301                          ASL     R1              ;MAKE IT INTO A BYTE OFFSET
 3290 020112  062761  000001  003130          ADD     #1,ERTABL(R1)   ;ADD 1 TO THE PROPER UNIT'S ERROR COUNTER
 3291 020120  005237  002170                  INC     FATFLG          ;BUMP FATAL ERROR COUNTER
 3292 020124  023727  002170  000031          CMP     FATFLG,#25.     ;CHECK AGAINST 25
 3293 020132  002406                          BLT     9$              ;BR, IF LESS THAN 25 ERRORS
 3294 020134                                  RFLAGS  R0              ;READ THE FLAGS INTO R0
      020134  104421                          TRAP    C$RFLA
 3295 020136  032700  040000                  BIT     #BIT14,R0       ;BR, IF LOOP ON ERROR IS SET
 3296 020142  001002                          BNE     9$              ;OTHERWISE NEVER BE ABLE TO SCOPE ETC.
 3297 020144  004737  020152                  JSR     PC,CKDROP       ;DROP UNIT IF ALLOWED
 3298 020150  000207                  9$:     RTS     PC              ;RETURN ETC
 3299                                 ;
 3300                                 ;
 3301                                 ;
```

```
                                        .SBTTL  CKDROP  - CHECK IF UNIT SHOULD BE DROPPED
                                ;+
                                ; CHECK IF UNIT SHOULD BE DROPPED
                                ;-
020152  010046                 CKDROP: MOV     R0,-(SP)
020154                                  FORCERROR       1$,NOTSSR
020164                                  RFLAGS  R0
020164  104421                         TRAP    C$RFLA
020166  032700  000040                 BIT     #IDU,R0
020172  001010                         BNE     1$
020174  011600                         MOV     (SP),R0
020176  012737  177777  003060         MOV     #-1,DUFLG
020204                                  DODU    UNITN
020204  013700  002150                 MOV     UNITN,R0
020210  104451                         TRAP    C$DODU
020212                                  DOCLN                   ;ABORT THE PASS
020212  104444                         TRAP    C$DCLN
020214  012600                 1$:     MOV     (SP)+,R0
020216  000207                         RTS     PC
                                        .SBTTL  CONFIG  - DETERMINE CONFIGURATION OF SYSTEM
                                ;
                                ; SUBROUTINE - DETERMINE CONFIGURATION OF TU80 SYSTEM.
                                ;
020220                          CONFIG:
020220  004737  016644                 JSR     PC,SOFINIT
020224  000207                         RTS     PC
```

```
3333                                            .SBTTL  KTON,KTOFF      - ENABLE/DISABLE MEMORY MANAGEMENT
3334                                    ;
3335                                    ; SUBROUTINE - ENABLE MEM MGT.
3336                                    ;
3337 020226  005737  003100            KTON:   TST     KTFLG           ; GOT KT?
3338 020232  001403                            BEQ     1$              ; NO.
3339 020234  012737  000001  177572            MOV     #1,SR0          ; YES. ENABLE KT11.
3340 020242  000207                    1$:     RTS     PC
3341
3342
3343
3344                                    ;
3345                                    ; SUBROUTINE - DISABLE MEM MGT.
3346                                    ;
3347 020244  005737  003100            KTOFF:  TST     KTFLG           ; GOT KT11?
3348 020250  001405                            BEQ     1$              ; NO.
3349 020252  000240                            NOP
3350 020254  000240                            NOP
3351 020256  012737  000000  177572            MOV     #0,SR0          ; DISABLE KT.
3352 020264  000207                    1$:     RTS     PC
3353
3354
```

```
                                        .SBTTL  SETMAP  - SETUP PAR6 MAPPING

                                ;+
                                ;
                                ;THIS ROUTINE SETS UP KERNEL PAR6 TO HANDLE
                                ;AN 18 BIT ADDRESS. THE OFFSET INTO THE PAGE
                                ;IS RETURNED BIASED TO PAR6.
                                ;
                                ;INPUTS:
                                ;
                                ;       R0      HIGH ORDER ADDRESS BITS
                                ;       R1      LOW ORDER ADDRESS BITS
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      OFFSET INTO BLOCK WITH PAR6 BIAS (I.E. THE ADDRESS)
                                ;       CARRY   SET IF SUCCESS
                                ;               CLR IF ERROR
                                ;-
020266                          SETMAP:
020266                                  SAVREG                          ;SAVE R1-R4 UNTIL NEXT RETURN
020272  005737  003100                  TST     KTFLG                   ;SYSTEM HAVE ABOVE 28K?
020276  001433                          BEQ     10$                     ;BR IF NO
020300  010102                          MOV     R1,R2                   ;SAVE LOW ORDER BITS
        000006                          .REPT   6
                                        ASR     R0                      ;CONVERT WORD ADDRESS TO 32W BLOCKS
                                        ROR     R1                      ;MAKE IT DOUBLE PRECISION
                                        .ENDR
020332  042701  000177                  BIC     #177,R1                 ;ALINE FOR LOWER 4K BOUNDARY
020336  020137  003100                  CMP     R1,KTFLG                ;HIGHER THAN EXISTING MEMORY?
020342  103011                          BHIS    10$                     ;BR IF YES
020344  010137  172354                  MOV     R1,@#KIPAR6             ;SETUP MAPPING REGISTER PAR6
020350  042702  160000                  BIC     #160000,R2              ;SETUP DISPLACEMENT IN PAGE
020354  062702  140000                  ADD     #140000,R2              ;ADD IN PAR6 BIAS
020360  010200                          MOV     R2,R0                   ;RETURN IN R0
020362  000261                          SEC                             ;SET SUCCESS
020364  000401                          BR      15$                     ;
020366  000241                  10$:    CLC                             ;SET FAILURE
020370  000207                  15$:    RTS     PC                      ;RETURN
```

```
                                        .SBTTL  FILLMEM - FILL MEMORY WITH BACKGROUND PATTERN
                                ;+
                                ;  FILL MEMORY WITH A BACKGROUND PATTERN
                                ;
                                ; INPUTS:
                                ;
                                ;       R0 = BACKGROUND PATTERN
                                ;       FREE    = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
                                ;       KTFLG   = SET TO HIGHEST MEMORY LOCATION IF > 28K.
                                ;
                                ; OUTPUTS:
                                ;
                                ;       NONE
                                ;-
                                ;
020372                          FILLMEM:
020372                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
020376  004737  020244                  JSR     PC,KTOFF                ;DISABLE KT.
020402  010003                          MOV     R0,R3                   ;COPY TEST PATTERN
020404  013701  003072                  MOV     FREE,R1                 ;GET FIRST FREE LOCATION
020410  013702  003074                  MOV     FRESIZ,R2               ;SIZE OF FREE SPACE BELOW 28K.
020414  010321                  10$:    MOV     R3,(R1)+                ;STORE A BACKGROUND WORD
020416  005302                          DEC     R2                      ;DONE ALL MEMORY IN FREE SPACE?
020420  003375                          BGT     10$                     ;BR IF NO
020422  005737  003100                  TST     KTFLG                   ; GOT KT?
020426  001452                          BEQ     55$                     ; NO. GET OUT.
020430  004737  020226                  JSR     PC,KTON                 ; YES. ENABLE KT.
020434  005000                          CLR     R0                      ;HIGH ORDER ADDRESS START
020436  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
020506  004737  020266                  JSR     PC,SETMAP               ;SETUP PAR6 MAPPING REGISTER
020512  010320                  30$:    MOV     R3,(R0)+                ;STORE TEST PATTERN IN >28K ADDRESS
020514  020027  160000                  CMP     R0,#160000              ;END OF PAR6 MAPPING AREA?
020520  103774                          BLO     30$                     ;BR IF NO
020522  162700  020000                  SUB     #20000,R0               ;BACKUP INTO PAR6 MAPPING BEGIN
020526  062737  000200  172354          ADD     #200,@#KIPAR6           ;POINT TO NEXT 4K BLOCK >28K.
020534  023737  172354  003100          CMP     @#KIPAR6,KTFLG          ;END OF MEMORY?
020542  001402                          BEQ     50$                     ;BR IF YES
020544  000137  020512                  JMP     30$                     ;KEEP GOING ON ETC.
020550  004737  020244          50$:    JSR     PC,KTOFF                ; DISABLE KT.
020554  000207                  55$:    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
                                ;-
020556                          CMPMEM:
020556                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
020562  010003                          MOV     R0,R3           ;COPY TEST PATTERN
020564  004737  020244                  JSR     PC,KTOFF        ;DISABLE KT.
020570  013701  003072                  MOV     FREE,R1         ;GET FIRST FREE LOCATION
020574  013702  003074                  MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
020600  020311                  10$:    CMP     R3,(R1)         ;FREE SPACE LOCATION EQUAL TO EXPD?
020602  001411                          BEQ     15$             ;BR IF YES
020604  010137  002204                  MOV     R1,ERRLO        ;SAVE ADDRESS IN ERROR
020610  005037  002202                  CLR     ERRHI           ;NO HIGH ADDRESS
020614  010337  002176                  MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
020620  011137  002200                  MOV     (R1),RECV       ;SAVE RECV FOR ERROR REPORT
020624  000474                          BR      50$             ;
020626  005721                  15$:    TST     (R1)+           ;POINT TO NEXT ADDRESS
020630  005302                          DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
020632  003362                          BGT     10$             ;BR IF NO
020634  005737  003100                  TST     KTFLG           ; GOT KT?
020640  001472                          BEQ     55$             ; NO. GET OUT.
020642  004737  020226                  JSR     PC,KTON         ; YES. ENABLE KT.
020646  005000                          CLR     R0              ;HIGH ORDER ADDRESS START
020650  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
020704  042701  000177                  BIC     #177,R1         ;ALINE 4K BOUNDARY
020710  010046                          MOV     R0,-(SP)        ;SAVE HIGH ORDER
020712  010146                          MOV     R1,-(SP)        ;SAVE LOW ORDER
020714  004737  020266                  JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
020720  010004                          MOV     R0,R4           ;COPY ADDRESS BIASED TO PAR6
020722  012601                          MOV     (SP)+,R1        ;RESTORE LOW ORDER IN NON PAR6 FORMAT
020724  012600                          MOV     (SP)+,R0        ;RESTORE HIGH ORDER IN NON PAR6 FORMAT
020726  020314                  30$:    CMP     R3,(R4)         ;ABOVE 28K LOCATION EQUAL EXPD?
020730  001411                          BEQ     32$             ;BR IF YES
020732  010037  002202                  MOV     R0,ERRHI        ;SAVE HIGH ORDER IN ERROR
```

```
3502 020736  010137  002204                    MOV     R1,ERRLO        ;SAVE LOW ORDER IN ERROR
3503 020742  010337  002176                    MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
3504 020746  011437  002200                    MOV     (R4),RECV       ;SAVE RECV FOR ERROR REPORT
3505 020752  000421                            BR      50$             ;
3506 020754  062701  000002          32$:      ADD     #2,R1           ;UPDATE NON PAR6 ADDRESS
3507 020760  005500                            ADC     R0              ;MAKE IT DOUBLE PRECISION ADD
3508 020762  062704  000002                    ADD     #2,R4           ;UPDATE PAR FORMAT ADDRESS
3509 020766  020427  160000                    CMP     R4,#160000      ;END OF PAR6 MAPPING AREA?
3510 020772  103755                           BLO     30$             ;BR IF NO
3511 020774  162704  020000                    SUB     #20000,R4       ;BACKUP INTO PAR6 MAPPING BEGIN
3512 021000  062737  000200  172354           ADD     #200,@#KIPAR6   ;POINT TO NEXT 4K BLOCK >28K.
3513 021006  023737  172354  003100           CMP     @#KIPAR6,KTFLG  ;END OF MEMORY?
3514 021014  101744                           BLOS    30$             ;BR IF NO
3515 021016  004737  020244          50$:      JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
3516 021022  000241                           CLC                     ;SET FAILURE
3517 021024  000403                           BR      60$             ;
3518 021026  004737  020244          55$:      JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
3519 021032  000261                           SEC                     ;SET SUCCESS
3520 021034  000207                  60$:      RTS     PC
3521
```

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

021036                          REGSAV:
021036                                  BREAK                   ;LOOK FOR CNTL C
021036  104422                          TRAP    C$BRK
021040  010446                          MOV     R4,-(SP)
021042  010346                          MOV     R3,-(SP)
021044  010246                          MOV     R2,-(SP)
021046  010146                          MOV     R1,-(SP)
021050  010546                          MOV     R5,-(SP)
021052  016605  000012                  MOV     10.(SP),R5
021056  004736                          JSR     PC,@(SP)+
021060  012601                          MOV     (SP)+,R1
021062  012602                          MOV     (SP)+,R2
021064  012603                          MOV     (SP)+,R3
021066  012604                          MOV     (SP)+,R4
021070  012605                          MOV     (SP)+,R5
021072                                  BREAK                   ;LOOK FOR CNTL C
021072  104422                          TRAP    C$BRK
021074  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
                                1$:     GMANID  DATASC,PATDAT,0,377,0,377,NO
021102  104443                          TRAP    C$GMAN
021104  000406                          BR      10000$
021106  021132                          .WORD   PATDAT
021110  000022                          .WORD   T$CODE
021112  021134                          .WORD   DATASC
021114  000377                          .WORD   377
021116  000000                          .WORD   T$LOLIM
021120  000377                          .WORD   T$HILIM
021122                          10000$:
021122  103367                          BNCOMPLETE      1$      ;RETRY IF ERROR
                                        BCC     1$
021124  013700  021132                  MOV     PATDAT,R0       ;DATA PATTERN FROM OPERATOR
021130  000207                          RTS     PC              ;RETURN TO CALLER
                                ;+
                                ;LOCAL DATA AREA
                                ;-
021132  000000                  PATDAT: .WORD   0               ;TEMPORARY STORAGE FOR DATA
021134    105     116     124   DATASC: .ASCIZ  'ENTER DATA PATTERN'
                                        .EVEN
```

```
3595                                            .SBTTL  GETSEL  - ISSUE MENU AND GET OPERATOR RESPONSE
3596                                    ;+
3597                                    ;ROUTINE TO ISSUE A MENU AND GET
3598                                    ;THE OPERATOR'S RESPONSE.
3599                                    ;INPUTS:
3600                                    ;       R0      ADDRESS OF ASCIZ STRING OF MENU
3601                                    ;       R1      MAXIMUM ALLOWABLE OPERATOR RESPONSE
3602                                    ;OUTPUTS:
3603                                    ;       R0      NUMBER OF THE OPERATOR'S SELECTION
3604                                    ;-
3605 021160                            GETSEL::
3606 021160                                    SAVREG                          ;SAVE GENERAL REGISTERS
3607 021164  010002                            MOV     R0,R2                   ;SAVE THE MENU ADDRESS
3608 021166  010203                    1$.     MOV     R2,R3                   ;START OF MENU STRING
3609 021170  005713                    2$:     TST     (R3)                    ;END OF ASCII ?
3610 021172  001412                            BEQ     3$                      ;BRANCH IF ALL LINES DISPLAYED
3611 021174                                    PRINTF  #SELASC,(R3)+           ;DISPLAY THE MENU
     021174  012346                            MOV     (R3)+,-(SP)
     021176  012746  021344                    MOV     #SELASC,-(SP)
     021202  012746  000002                    MOV     #2,-(SP)
     021206  010600                            MOV     SP,R0
     021210  104417                            TRAP    C$PNTF
     021212  062706  000006                    ADD     #6,SP
3612 021216  000764                            BR      2$
3613 021220                            3$:     GMANID  MENASC,MENRES,D,-1,0,-1,NO
     021220  104443                            TRAP    C$GMAN
     021222  000406                            BR      10001$
     021224  021400                            .WORD   MENRES
     021226  000042                            .WORD   T$CODE
     021230  021351                            .WORD   MENASC
     021232  177777                            .WORD   -1
     021234  000000                            .WORD   T$LOLIM
     021236  177777                            .WORD   T$HILIM
     021240                            10001$:
3614 021240                                    BNCOMPLETE      1$              ;RETRY IF ERROR
     021240  103352                            BCC     1$
3615 021242  013700  021400                    MOV     MENRES,R0               ;GET THE OPERATOR'S REPLY
3616 021246  020001                            CMP     R0,R1                   ;COMPARE TO MAXIMUM ALLOWED
3617 021250  101411                            BLOS    5$                      ;BRANCH IF OK
3618 021252                                    PRINTF  #MENERR                 ;DISPLAY ERROR MESSAGE
     021252  012746  021276                    MOV     #MENERR,-(SP)
     021256  012746  000001                    MOV     #1,-(SP)
     021262  010600                            MOV     SP,R0
     021264  104417                            TRAP    C$PNTF
     021266  062706  000004                    ADD     #4,SP
3619 021272  000735                            BR      1$                      ;RETRY
3620 021274  000207                    5$:     RTS     PC                      ;RETURN TO CALLER
3621 021276     045     116     045   MENERR  .ASCIZ  '%N%A *** Menu Selection Too Large ***'
3622 021344     045     116     045   SELASC  .ASCIZ  '%N%T'
3623 021351     105     156     164   MENASC: .ASCIZ  'Enter Menu Selection: '
3624                                            VEN
3625 021400  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.
                                ;
                                ;-
                                CHKMAN::
021402                                  SAVREG                  ;SAVE THE REGISTERS
021402                                  MANUAL                  ;SEE IF MANUAL INTERVENTION OK
021406  104450                          TRAP    C$MANI
021410                                  BCOMPLETE 1$            ;BRANCH IF ALLOWED
021410  103411                          BCS     1$
021412                                  PRINTF  #NOMAN          ;PRINT THE WARNING MESSAGE
021412  012746  021436                  MOV     #NOMAN,-(SP)
021416  012746  000001                  MOV     #1,-(SP)
021422  010600                          MOV     SP,R0
021424  104417                          TRAP    C$PNTF
021426  062706  000004                  ADD     #4,SP
021432  000241                          CLC                     ;CLEAR CARRY FOR ERROR
021434  000207                  1$:     RTS     PC              ;RETURN

021436     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.
                                ;
021532                          ENVIRN: MEMORY  R0
021532  104431                          TRAP    C$MEM
021534  010037  003072                  MOV     R0,FREE         ; GET 1ST FREE ADDRESS...
021540  062737  000002  003072          ADD     #2,FREE
021546  011037  003074                  MOV     (R0),FRESIZ     ;...AND WORD COUNT.
021552  162737  000004  003074          SUB     #4,FRESIZ
021560  013702  002012                  MOV     L$UNIT,R2       ; GET NUMBER OF UNITS
021564  162737  000007  003074  10$:     SUB     #7,FRESIZ       ; TAKE AWAY 7 WORDS PER UNIT
021572  005302                          DEC     R2
021574  001373                          BNE     10$
021576  013700  003072                  MOV     FREE,R0         ;GET FIRST FREE ADDRESS
021602  063700  003074                  ADD     FRESIZ,R0       ;POINT TO LAST FREE ADDRESS
021606  162700  000002                  SUB     #2,R0           ;BACKUP 1 WORD
021612  010037  003076                  MOV     R0,FREEHI       ;STORE LAST FREE ADDRESS
021616  000207                          RTS     PC              ;RETURN
```

```
                                        .SBTTL  KTINIT  - SETUP KT11 MEMORY MANAGEMENT REGISTERS
                                ;+
                                ;
                                ;ROUTINE TO INIT KT-11
                                ;
                                ;-
021620                          KTINIT:
021620  005037  003100                  CLR     KTFLG           ; INIT >28K MEMORY FLAG
021624  005037  003102                  CLR     KTENABLE        ; INIT TEST >28K FLAG
021630  023727  002120  001577          CMP     L$HIME,#1577    ; GOT ENOUGH MEMORY (>28K)?
021636  101444                          BLOS    9$              ; NO.
021640  013700  000004                  MOV     @#ERRVEC,R0     ; SAVE OLD ERR VEC PTR.
021644  012737  021736  000004          MOV     #2$,@#ERRVEC    ; SET ERR VEC PTR.
021652  005737  177572                  TST     @#SR0           ; GOT KT11?
021656  000240                          NOP                     ;  (TRAP IF NO).
021660  013737  002120  003100          MOV     L$HIME,KTFLG    ; YES. SET KT FLAG.
021666  042737  000177  003100          BIC     #177,KTFLG      ;
021674  010037  000004                  MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
021700  005000                          CLR     R0              ; R0 = AR DATA.
021702  012701  172340                  MOV     #KIPAR0,R1      ; R1 = KI REGS PTR.
021706  012761  077406  177740  1$:     MOV     #77406,-40(R1)  ; SET DESCRIPTOR REG.
021714  010021                          MOV     R0,(R1)+        ; SET KIPAR REG.
021716  062700  000200                  ADD     #200,R0         ; BUMP AR DATA BY "4K".
021722  020027  002000                  CMP     R0,#2000        ; AT "I/O"?
021726  001367                          BNE     1$              ; NO.
021730  012741  177600                  MOV     #177600,-(R1)   ; YES. SET KTPAR7 FOR I/O.
021734  000405                          BR      9$
                                ;
021736  012716  021744          2$:     MOV     #6$,(SP)        ; SET UP RETURN
021742  000002                          RTI                     ; RTI TO NEXT LOCATION
                                ;
021744  010037  000004          6$:     MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
                                ;
021750  000207                  9$:     RTS     PC
021752                                  BGNPROT
021752                          L$PROT::
021752  177777  177777  177777          .WORD   -1, -1, -1, -1  ;NO DEVICE PROTECTION REQUIRED.
021762                                  ENDPROT
```

```
                                        .SBTTL  INITIALIZE SECTION

                                ;++
                                ;THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
                                ;AT THE BEGINNING OF EACH PASS.
                                ;
                                ;IF "START" OR "RESTART", SET QUICK-PASS FLAG AND BUS-INIT.
                                ;IF "CONTINUE", NOTHING IS REQUIRED.
                                ;
                                ;--
                                ;+
                                ;INSERT TEMPORARY JUMP TO ODT
                                ;-
                                        BGNINIT
021762                          L$INIT::
021762                          40$:
021762  012737  005672  002146          MOV     #EPRT1,EPRTSW   ;SET UP PRIMARY MESSAGE FOR RFPLACEMENT
021770  005037  003106                  CLR     SIFLAG          ;CLEAR "SOFT INIT" FLAG
021774  005037  003102                  CLR     KTENABLE        ;CLEAR TEST ABOVE 28K FLAG
022000  005037  002246                  CLR     RAMSIZ          ;CLEAR RAM SIZE FOR RAMERR ROUTINE
022004                                  READEF  #EF.CONTINUE
022004  012700  000036                  MOV     #EF.CONTINUE,R0
022010  104447                          TRAP    C$REFG
022012                                  BNCOMPLETE 1$
022012  103023                          BCC     1$
022014  023737  002150  002012          CMP     UNITN,L$UNIT    ;UNIT IN RANGE?
022022  103073                          BHIS    4$              ;BR IF NO.
022024  005737  003060                  TST     DUFLG           ;DROPPED UNIT?
022030  100475                          BMI     NXTU            ;BR IF YES
022032  013701  002150                  MOV     UNITN,R1
022036  006301                          ASL     R1
022040  005761  003130                  TST     ERTABL(R1)
022044  001521                          BEQ     SETU
022046  032761  040000  003130          BIT     #BIT14,ERTABL(R1) ;DROPPED?
022054  001063                          BNE     NXTU
022056                                  EXIT    INIT            ;DO NOTHING IF "CONTINUE".
022056  104432                          TRAP    C$EXIT
022060  000430                          .WORD   L10030-.
022062                          1$:     READEF  #EF.NEW
022062  012700  000035                  MOV     #EF.NEW,R0
022066  104447                          TRAP    C$REFG
022070                                  BNCOMPLETE NXTU         ;TAKE NEXT UNIT IF NOT NEW PASS.
022070  103055                          BCC     NXTU
022072                                  READEF  #EF.START
022072  012700  000040                  MOV     #EF.START,R0
022076  104447                          TRAP    C$REFG
022100                                  BCOMPLETE 2$
022100  103404                          BCS     2$
022102                                  READEF  #EF.RESTART
022102  012700  000037                  MOV     #EF.RESTART,R0
022106  104447                          TRAP    C$REFG
022110                                  BNCOMPLETE 31$
022110  103034                          BCC     31$
022112                          2$:                             ;1ST PASS, BUS-INIT...
022112                                  BRESET                  ;BUS RESET.
022112  104433                          TRAP    C$RESET
022114  005037  002162                  CLR     TS1CNT          ;NUMBER OF TESTS RUN IN PASS
```

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CZTUYA0 TU80 FRONT END PRT C    MACRO M1200  29-MAR-83 13:43  PAGE 70-1
INITIALIZE SECTION

 3775 022120  005037  002170                    CLR     FATFLG          ;RESET FLAG TO ZERO 'FATAL ERRORS'
 3776 022124  000406                            BR      19$             ;BR, IF THE FLAG IS NOT SET
 3777                                                                   ;(NO DEBUGGER ETC.)
 3778 022126  012746  000340                    MOV     #340,-(SP)
 3779 022132  012746  022146                    MOV     #20$,-(SP)      ;RETURN TO DEBUGGER
 3780 022136  000137  065446                    JMP     O.ODT           ;;@@ENTER THE DEBUGGER
 3781 022142  005037  003332            19$:    CLR     SKIPT           ;CLEAR THE SUBTEST "SKIPPER"
 3782 022146                            20$:
 3783 022146  012737  177777  002152            MOV     #-1,QVP         ;...QUICK VERIFY...
 3784 022154  004737  021532                    JSR     PC,ENVIRN       ;SET ENVIRONMENT.
 3785 022160  004737  021620                    JSR     PC,KTINIT       ;INITIALIZE KT MEMORY MANAGEMENT
 3786 022164  012700  003130                    MOV     #ERTABL,R0
 3787 022170  005020                    30$:    CLR     (R0)+           ;CLEAR THE ERROR TABLE
 3788 022172  020027  003330                    CMP     R0,#ERTABE
 3789 022176  103774                            BLO     30$
 3790 022200  000404                            BR      4$
 3791 022202  005037  002152            31$:    CLR     QVP
 3792 022206  000137  022256                    JMP     PASRPT          ;GO REPORT THE STATUS
 3793
 3794 022212                            4$:
 3795 022212  012737  177777  002150    NEWPAS: MOV     #-1,UNITN       ;INIT UNIT NUMBER...
 3796 022220  005037  002166                    CLR     DEVCNT          ;CLEAR COUNT OF DEVICES RUNNING
 3797 022224                            NXTU:   BREAK
      022224  104422                            TRAP    C$BRK
 3798 022226  005237  002150                    INC     UNITN           ;...AND SET NEXT UNIT NUMBER.
 3799 022232  023737  002150  002012            CMP     UNITN,L$UNIT
 3800 022240  103423                            BLO     SETU
 3801 022242  012737  177777  003060            MOV     #-1,DUFLG
 3802 022250  000401                            BR      11$
 3803 022252                                    DOCLN                   ;ABORT, NO MORE UNITS.
      022252  104444                            TRAP    C$DCLN
 3804 022254  000240                    11$:    NOP
 3805 022256                            PASRPT:
 3806 022256  023727  002012  000001            CMP     L$UNIT,#1       ;HOW MANY UNITS SELECTED?
 3807 022264  101752                            BLOS    NEWPAS          ;BR IF ONLY 1
 3808 022266  005737  002166                    TST     DEVCNT          ;ARE ANY STILL RUNNING?
 3809 022272  001747                            BEQ     NEWPAS          ;BR IF NO
 3810 022274                                    RFLAGS  R0
      022274  104421                            TRAP    C$RFLA
 3811 022276  032700  000100                    BIT     #ISR,R0         ;SHOULD WE PRINT STATISTICS
 3812 022302  001343                            BNE     NEWPAS          ;BR IF NO
 3813
 3814 022304                                    DORPT
      022304  104424                            TRAP    C$DRPT
 3815 022306  000741                            BR      NEWPAS
 3816 022310                            10$:
 3817
 3818 022310                            SETU:   GPHARD  UNITN,R0        ;GET UNIT N P-TABLE POINTER.
      022310  013700  002150                    MOV     UNITN,R0
      022314  104442                            TRAP    C$GPHRD
 3819 022316                                    BNCOMPLETE NXTU         ;BR IF UNIT NOT AVAILABLE.
      022316  103342                            BCC     NXTU
 3820 022320  005037  003060                    CLR     DUFLG           ;CLEAR "DROPPED" FLAG.
 3821 022324  005237  002166                    INC     DEVCNT
 3822 022330  012001                            MOV     (R0)+,R1        ;GET 1ST REGISTER ADDRESS.
 3823 022332  010137  002154                    MOV     R1,CSRADDR      ;ADDRESS OF REGISTERS OF UNIT UNDER TEST
 3824
```

```
3825 022336  012001                        MOV     (R0)+,R1        ;GET VECTOR ADDRESS.
3826 022340  011002                        MOV     (R0),R2         ;GET INTERRUPT PRIORITY
3827 022342  010237  002160                MOV     R2,1PRI         ;SET INTERRUPT PRIORITY.
3828 022346  010137  002156                MOV     R1,IVEC         ;SET INTERRUPT VECTOR POINTER...
3829 022352  012721  017066                MOV     #INTR,(R1)+     ;...VECTOR...
3830 022356  010221                        MOV     R2,(R1)+        ;...AND PRIORITY.
3831
3832 022360                          1$:
3833                                 ;      TST     QVP             ;1ST PASS ??
3834                                 ;      BEQ     5$              ;NO, SKIP THE PASS 1 STUFF.
3835
3836                                 ;
3837                                 ;1ST PASS, CHECK THAT DEVICE ADDRESSES ARE VALID, AND
3838                                 ;THAT THE DISPLAY STATUS IS PROPERLY INITIALIZED.
3839                                 ;
3840 022360  013701  002150                MOV     UNITN,R1
3841 022364  006301                        ASL     R1
3842 022366  052761  100000  003130        BIS     #BIT15,ERTABL(R1) ;SAY DEVICE RUNNING
3843 022374  005037  005232                CLR     EXTA            ;CLEAR ERROR EXTENSION FLAG.
3844 022400  023727  002012  000001        CMP     L$UNIT,#1       ;ARE WE TESTING MULTIPLE UNITS?
3845 022406  101416                        BLOS    10$             ;BR IF NO.
3846 022410                                RFLAGS  R0              ;YES -- GET OPERATOR FLAGS.
     022410  104421                        TRAP    C$RFLA
3847 022412  032700  001000                BIT     #PNT,R0         ;SHOULD WE PRINT UNIT #?
3848 022416  001412                        BEQ     10$             ;BR IF NOT.
3849 022420                                PRINTF  #PUNIT,UNITN    ;PRINT THE UNIT #
     022420  013746  002150                MOV     UNITN,-(SP)
     022424  012746  022512                MOV     #PUNIT,-(SP)
     022430  012746  000002                MOV     #2,-(SP)
     022434  010600                        MOV     SP,R0
     022436  104417                        TRAP    C$PNTF
     022440  062706  000006                ADD     #6,SP
3850 022444                          10$:
3851 022444  005037  003062                CLR     NODEV
3852 022450  013701  002154                MOV     CSRADDR,R1      ;ADDRESS OF FIRST REGISTER
3853 022454  010102                        MOV     R1,R2           ;START OF REGISTERS
3854 022456  062702  000000                ADD     #TSSR,R2        ;ADDRESS OF TSSR REGISTER
3855 022462  004737  017274                JSR     PC,XNXM         ;TEST BOTH CONTROLLER REGISTERS...
3856 022466  103005                        BCC     2$              ;...AND BR IF ALL OK.
3857 022470  010137  003062                MOV     R1,NODEV        ;FLAG DEVICE AS NON-EXISTENT
3858 022474  012737  177777  003060        MOV     #-1,DUFLG       ;DROP THIS UNIT.
3859 022502                          2$:
3860                                 ;
3861                                 ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
3862                                 ;
3863 022502                          5$:    SETPRI  #PRI00          ;ENABLE INTERRUPTS.
     022502  012700  000000                MOV     #PRI00,R0
     022506  104441                        TRAP    C$SPRI
3864 022510                                ENDINIT
     022510                          L10030:
     022510  104411                        TRAP    C$INIT
3865
3866 022512     045     116     045  PUNIT: .ASCIZ  /%N%N%A***** TESTING UNIT %D2%A *****/
3867                                        .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.
                                ;--
022560                                  BGNAU
022560                          L$AU::
022560  010001                        MOV     R0,R1           ; GET UNIT TO BE ADDED (R0)
022562  006301                        ASL     R1              ; MAKE IT A WORD INDEX
022564  052761  100000  003130        BIS     #100000,ERTABL(R1) ; SET THE "ACTIVE" BIT
022572  042761  040000  003130        BIC     #40000,ERTABL(R1)  ; CLEAR THE "DROPPED" BIT
022600                              PRINTF  #1$,R0
022600  010046                      MOV     R0,-(SP)
022602  012746  022626              MOV     #1$,-(SP)
022606  012746  000002              MOV     #2,-(SP)
022612  010600                      MOV     SP,R0
022614  104417                      TRAP    C$PNTF
022616  062706  000006              ADD     #6,SP
022622                              EXIT    AU
022622  000167                      .WORD   J$JMP
022624  000026                      .WORD   L10031-2-.
022626     045     116     045  1$:     .ASCIZ  /%N%A  UNIT %D%A ADDED/
                                        .EVEN

                                        ENDAU                   ; UNUSED.
022654                          L10031:
022654  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.

022656                                  BGNDU
022656                          L$DU::
022656  012737  177777  003060        MOV     #-1,DUFLG
022664  010001                      MOV     R0,R1
022666  006301                      ASL     R1
022670  052761  140000  003130        BIS     #140000,ERTABL(R1)      ; SAY DROPPED
022676  000240  000240  000240        240,240,240                     ; ?????????
022704                              PRINTF  #1$,R0
022704  010046                      MOV     R0,-(SP)
022706  012746  022732              MOV     #1$,-(SP)
022712  012746  000002              MOV     #2,-(SP)
022716  010600                      MOV     SP,R0
022720  104417                      TRAP    C$PNTF
022722  062706  000006              ADD     #6,SP
022726                              EXIT    DU
022726  000167                      .WORD   J$JMP
022730  000030                      .WORD   L10032-2-.
```

```
3906 022732     045     116     045  1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
3907                                         .EVEN
3908 022762                                  ENDDU
     022762                             L10032:
     022762  104453                         TRAP    C$DU
3909                                 ;++
3910                                 ; AUTO-DROP CODE SECTION.
3911                                 ;--
3912 022764                                  BGNAUTO
     022764                             L$AUTO::
3913 022764  012703  000550                 MOV     #360.,R3        ;ENOUGH TIME FOR 2400' REEL TO REWIND
3914 022770  004737  017120             10$: JSR     PC,WAITF        ;WAIT FOR SSR TO SET
3915 022774  103420                         BCS     20$             ;LEAVE WHEN SSR IS SET
3916 022776                                  DELAY   250.            ;WAIT FOR .25 SECONDS
     022776  012727  000372                 MOV     #250.,(PC)+
     023002  000000                         .WORD   0
     023004  013727  002116                 MOV     L$DLY,(PC)+
     023010  000000                         .WORD   0
     023012  005367  177772                 DEC     -6(PC)
     023016  001375                         BNE     .-4
     023020  005367  177756                 DEC     -22(PC)
     023024  001367                         BNE     .-20
3917 023026  005303                         DEC     R3              ;BUMP COUNTER DOWN
3918 023030  001357                         BNE     10$             ;KEEP GOING
3919 023032  004737  020152                 JSR     PC,CKDROP       ;TRY AND DROP UNIT
3920 023036                             20$:
3921 023036                                  ENDAUTO                 ; UNUSED.
     023036                             L10033:
     023036  104461                         TRAP    C$AUTO
```

```
 3923                                           .SBTTL  CLEAN-UP AND REPORT CODING SECTIONS
 3924
 3925                                   ;++
 3926                                   ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS
 3927                                   ; EXECUTED AT THE END OF EACH PASS (OR SUB-PASS).
 3928                                   ; USE TO RETURN DEVICE UNDER TEST TO A NEUTRAL STATE.
 3929                                   ;--
 3930 023040                                    BGNCLN
      023040                            L$CLEAN::
 3931 023040  005737  003060                    TST     DUFLG           ;"DROPPED" FLAG IS SET ON...
 3932 023044  100405                            BMI     1$              ;...AND GROSS CONTROLLER FAULT...
 3933                                                                   ;...DON'T TRY TO XCT CLEANUP CODE.
 3934
 3935 023046  012765  000000  000000            MOV     #0,TSSR(R5)     ;DO SOFT INIT
 3936 023054  004737  017120                    JSR     PC,WAITF
 3937 023060                            1$:
 3938 023060                            2$:     ENDCLN
      023060                            L10034:
      023060  104412                            TRAP    C$CLEAN
 3939                                   ;++
 3940                                   ; THE REPORT CODING SECTION CONTAINS THE
 3941                                   ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
 3942                                   ;--
 3943 023062                                    BGNRPT
      023062                            L$RPT::
 3944 023062                                    PRINTS  #DEVSUM
      023062  012746  023324                    MOV     #DEVSUM,-(SP)
      023066  012746  000001                    MOV     #1,-(SP)
      023072  010600                            MOV     SP,R0
      023074  104416                            TRAP    C$PNTS
      023076  062706  000004                    ADD     #4,SP
 3945 023102  010246                            MOV     R2,-(SP)
 3946 023104  010346                            MOV     R3,-(SP)
 3947 023106  010446                            MOV     R4,-(SP)
 3948 023110  012704  003130                    MOV     #ERTABL,R4      ; GET START OF ERROR TABLE.
 3949 023114  005003                            CLR     R3              ; CLEAR UNIT NUMBER
 3950 023116  011402                    1$:     MOV     (R4),R2         ; GET ERROR TABLE ENTRY & TEST IT.
 3951 023120  001467                            BEQ     4$              ; ZERO IF UNIT NOT RUN
 3952 023122  100066                            BPL     4$
 3953 023124  032702  040000                    BIT     #BIT14,R2       ; WAS UNIT DROPPED?
 3954 023130  001015                            BNE     2$              ; BR IF YES
 3955 023132  042702  170000                    BIC     #^C7777,R2      ; GET ERROR COUNT FIELD
 3956 023136                                    PRINTS  #DEVONL,R3,R2   ; PRINT
      023136  010246                            MOV     R2,-(SP)
      023140  010346                            MOV     R3,-(SP)
      023142  012746  023361                    MOV     #DEVONL,-(SP)
      023146  012746  000003                    MOV     #3,-(SP)
      023152  010600                            MOV     SP,R0
      023154  104416                            TRAP    C$PNTS
      023156  062706  000010                    ADD     #10,SP
 3957 023162  000446                            BR      4$
 3958 023164  020227  160000            2$:     CMP     R2,#160000      ; WAS UNIT NON-EXISTENT?
 3959 023170  001012                            BNE     3$              ; BR IF NO
 3960 023172                                    PRINTS  #DEVNXR,R3
      023172  010346                            MOV     R3,-(SP)
      023174  012746  023431                    MOV     #DEVNXR,-(SP)
      023200  012746  000002                    MOV     #2,-(SP)
```

```
                023204  010600                          MOV     SP,R0
                023206  104416                          TRAP    C$PNTS
                023210  062706  000006                  ADD     #6,SP
     3961       023214  000431                          BR      4$
     3962       023216  020227  160001          3$:     CMP     R2,#160001      ; WAS UNIT NOT READY AT STARTUP?
     3963       023222  001012                          BNE     30$             ; BR IF NO.
     3964       023224                                  PRINTS  #DEVNRD,R3
                023224  010346                          MOV     R3,-(SP)
                023226  012746  023513                  MOV     #DEVNRD,-(SP)
                023232  012746  000002                  MOV     #2,-(SP)
                023236  010600                          MOV     SP,R0
                023240  104416                          TRAP    C$PNTS
                023242  062706  000006                  ADD     #6,SP
     3965       023246  000414                          BR      4$
     3966       023250  042702  170000          30$:    BIC     #^C7777,R2
     3967       023254                                  PRINTS  #DEVDRO,R3,R2
                023254  010246                          MOV     R2,-(SP)
                023256  010346                          MOV     R3,-(SP)
                023260  012746  023574                  MOV     #DEVDRO,-(SP)
                023264  012746  000003                  MOV     #3,-(SP)
                023270  010600                          MOV     SP,R0
                023272  104416                          TRAP    C$PNTS
                023274  062706  000010                  ADD     #10,SP
     3968       023300  062704  000002          4$:     ADD     #2,R4
     3969       023304  005203                          INC     R3
     3970       023306  020427  003330                  CMP     R4,#ERTABE
     3971       023312  103701                          BLO     1$
     3972       023314  012604                          MOV     (SP)+,R4
     3973       023316  012603                          MOV     (SP)+,R3
     3974       023320  012602                          MOV     (SP)+,R2
     3975       023322                                  ENDRPT                  ; UNUSED.
                023322                          L10035:
                023322  104425                          TRAP    C$RPT
     3976       023324     045     116     045  DEVSUM: .ASCIZ  /%N%ADEVICE STATUS SUMMARY:%N/
     3977       023361     045     101     040  DEVONL: .ASCIZ  /%A  UNIT %D3%A   ONLINE,  ERRORS = %D%N/
     3978       023431     045     101     040  DEVNXR: .ASCIZ  /%A  UNIT %D3%A   DROPPED, NON-EXISTENT REGISTER%N/
     3979       023513     045     101     040  DEVNRD: .ASCIZ  /%A  UNIT %D3%A   DROPPED, NOT READY AT STARTUP%N/
     3980       023574     045     101     040  DEVDRO: .ASCIZ  /%A  UNIT %D3%A   DROPPED, ERRORS = %D%N/
     3981                                              .EVEN
```

```
                                        .SBTTL  TEST  1: SPACE RECORDS
                                ;+
                                ;THIS TEST VERIFIES THAT THE SPACE RECORDS FORWARD AND SPACE
                                ;RECORDS REVERSE POSITION COMMANDS OPERATE PROPERLY WHEN SPACING
                                ;OVER NORMAL DATA RECORDS. OPERATION WHEN SPACING OVER TAPE MARKS
                                ;IS VERIFIED IN A SUBSEQUENT TEST. THE BASIC WRITE DATA TEST
                                ;SHOULD HAVE BEEN RUN SUCCESSFULLY FOR THIS TEST TO PRODUCE MEANINGFUL
                                ;RESULTS. THIS TEST CONSISTS OF A SERIES OF SUBTESTS. IN EACH
                                ;OF THE SUBTESTS, THE TAPE IS ENTIRELY WRITTEN WITH RECORDS
                                ;OF VARYING SIZES AND DATA CONTENT; THE FIRST 4 BYTES OF EACH
                                ;RECORD INDICATE THAT RECORD'S RELATIVE POSITION ON TAPE. AFTER
                                ;EACH SPACING OPERATION, THE TAPE POSITION IS VERIFIED BY READING
                                ;THE NEXT OR PREVIOUS RECORD AND COMPARING THE POSITION DATA WITH
                                ;THE EXPECTED RESULT.
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 8 SUBTESTS
                                ;-
023644                                  BGNTST
023644                                                                  T1::
023644  005037  002170                    CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
023650  005037  003100                    CLR     KTFLG           ;HOLD OFF KT11
023654  012737  005764  002146            MOV     #EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
023662  004737  020244                    JSR     PC,KTOFF                ;DON'T NEED LOTS OF MEMORY
023666  012700  031452                    MOV     #TST25ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
023672  004737  017406                    JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
023676  012737  000002  002164            MOV     #2,LOOPCNT              ;PERFORM 2 ITERATIONS
                                ;+
                                ;TEST 1, SUBTEST 1
                                ;
                                ;VERIFIES THAT A SPACE RECORDS FORWARD COMMAND WITH
                                ;THE CLEAR VOLUME CHECK (CVC) BIT CLEAR IS REJECTED IF
                                ;THE VOLUME CHECK (VCK) FLAG IS SET.
                                ;-
023704                          T25LOOP:
023704                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
023704                                                                          T1.1:
023704  104402                                                                  TRAP    C$BSUB
023706  004737  031470                    JSR     PC,T25REST              ;SET COMMAND PACKET
023712  005037  030260                    CLR     T25CNT                  ;CLEAR THE RECORD COUNTER AREA
023716  004737  031562                    JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
023722  004737  031624                    JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
023726  012737  176750  030262            MOV     #65000.,T25DLY          ;SET UP LOOP COUNTER
                                ;*************************************************************
                                ;
                                ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                ;
                                ;*************************************************************
023734  004737  016644          5$:     JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
023740  103427                          BCS     10$                     ;BR IF INIT WAS OK
023742                                  DELAY   250                     ;DELAY IF REQUIRED
023742  012727  000250                                                          MOV     #250,(PC)+
023746  000000                                                                  .WORD   0
023750  013727  002116                                                          MOV     L$DLY,(PC)+
023754  000000                                                                  .WORD   0
023756  005367  177772                                                          DEC     -6(PC)
023762  001375                                                                  BNE     .-4
023764  005367  177756                                                          DEC     -22(PC)
```

```
        023770  001367                                                          BNE     .-20
 4054   023772  005337  030262          DEC     T25DLY                  ;DEC DELAY COUNTER
 4055   023776  001356                  BNE     5$                              ;BR, IF LOOP IS REQUIRED
 4056   024000  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4060   024004  016501  000000          MOV     TSSR(R5),R1             ;CONTENTS OF TSSR REGISTER
 4061   024010                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        024010  104455                                                          TRAP    C$ERDF
        024012  000145                                                          .WORD   101
        024014  003550                                                          .WORD   SFIERR
        024016  011666                                                          .WORD   SFIMSG
 4062   024020  012704  030100  10$:    MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 4063                           ;*************************************************************
 4064                           ;
 4065                           ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 4066                           ;
 4067                           ;*************************************************************
 4068   024024  004737  010332          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 4069   024030  103407                  BCS     14$                     ;BR, IF COMMAND ISSUED OK
 4070   024032  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4074   024036  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 4075   024040                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        024040  104456                                                          TRAP    C$ERHRD
        024042  000146                                                          .WORD   102
        024044  004754                                                          .WORD   WRTMSG
        024046  011666                                                          .WORD   SFIMSG
 4076                           ;
 4077                           ;       CHECK FOR DRIVE OFF-LINE
 4078                           ;
 4079   024050  016501  000000  14$:    MOV     TSSR(R5),R1             ;READ THE TSSR
 4080   024054  032701  000100          BIT     #OFL,R1                 ;CHECK FOR DRIVE OFF LINE
 4081   024060  001406                  BEQ     15$                     ;BR, IF DRIVE IS ON LINE (GOOD)
 4085   024062                          ERRDF   ERRNO,T21OFL,EXPREC     ;"DRIVE IS OFF-LINE" (BAD)
        024062  104455                                                          TRAP    C$ERDF
        024064  000147                                                          .WORD   103
        024066  030264                                                          .WORD   T21OFL
        024070  016344                                                          .WORD   EXPREC
 4086   024072  004737  020152          JSR     PC,CKDROP               ;TRY AND DROP UNIT
 4087                           ;*************************************************************
 4088                           ;
 4089                           ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 4090                           ;
 4091                           ;*************************************************************
 4092   024076  004737  010434  15$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 4093   024102  103407                  BCS     30$                     ;BR, IF NO PROBLEM
 4094   024104  010001                  MOV     R0,R1                   ;SAVE TSSR
 4095   024106  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4099   024112                          ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
        024112  104456                                                          TRAP    C$ERHRD
        024114  000150                                                          .WORD   104
        024116  031257                                                          .WORD   T25RWN
        024120  011700                                                          .WORD   PKTSSR
 4100   024122                  30$:    CKLOOP                          ;LOOP IF SELECTED
        024122  104406                                                          TRAP    C$CLP1
 4101                           ;*************************************************************
 4102                           ;
 4103                           ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 4104                           ;
```

```
4105                                         ;*******************************************************************
4106 024124  013701  030126                           MOV     T25BFR+6,R1                    ;PICK UP XSTO
4107 024130  010102                                   MOV     R1,R2                          ;SET UP EXPECTED
4108 024132  052702  000002                           BIS     #BIT1,R2                       ;SET BOT BIT IN EXPECTED
4109 024136  020102                                   CMP     R1,R2                          ;DOES EXP = REC'D
4110 024140  001406                                   BEQ     40$                            ;BR, IF EQUAL (OK)
4111 024142  004737  020100                           JSR     PC,FATCHK                      ;INC AND CHECK FOR MORE THAN 25 ERRORS
4115 024146                                           ERRHRD  ERRNO,T25BOT,EXPREC            ;TAPE NOT AT BOT AFTER REWIND
     024146  104456                                                                                   TRAP    C$ERHRD
     024150  000151                                                                                   .WORD   105
     024152  030447                                                                                   .WORD   T25BOT
     024154  016344                                                                                   .WORD   EXPREC
4116 024156                                  40$:     CKLOOP                                 ;LOOP IF SELECTED
     024156  104406                                                                                   TRAP    C$CLP1
4117 024160  012703  000400                           MOV     #256.,R3                       ;RECORD SIZE
4118 024164  013737  003072  030232                   MOV     FREE,T25RB                     ;STARTING WRITE BUFFER ADDRESS
4119                                         ;*******************************************************************
4120                                         ;
4121                                         ;WRITE DATA,ACK,CVC=1 COMMAND
4122                                         ;
4123                                         ;*******************************************************************
4124 024172  012737  140005  030230                   MOV     #140005,T25PK3                 ;WRITE DATA,ACK,CVC=1 COMMAND
4125 024200  012704  030230                           MOV     #T25PK3,R4                     ;SET UP R4 WITH PACKET ADDRESS
4126 024204  010337  030236              65$:     MOV     R3,T25SZ                       ;SET UP RECORD SIZE IN PACKET
4127 024210  013777  030260  156654                   MOV     T25CNT,@FREE                   ;LOAD UP RECORD COUNTER IN WRT BUFFER
4128 024216  062737  000001  030260                   ADD     #1,T25CNT                      ;GET READY FOR NEXT RECORD
4129 024224  010465  177776                           MOV     R4,TSDB(R5)                    ;ISSUE COMMAND
4130 024230  004737  017120                           JSR     PC,WAITF                       ;WAIT FOR SSR TO SET
4131 024234  016501  000000                           MOV     TSSR(R5),R1                    ;GET TSSR CONTENTS
4132 024240  012702  000200                           MOV     #SSR,R2                        ;SET UP EXPECTED
4133 024244  020102                                   CMP     R1,R2                          ;ARE THEY EQUAL
4134 024246  001411                                   BEQ     75$                            ;BR, IF OK
4135 024250  032701  000004                           BIT     #BIT2,R1                       ;CHECK FOR TAPE STATUS ALERT
4136 024254  001014                                   BNE     120$                           ;BR, IF TSA IS SET (SUSPECT IS EOT)
4137 024256  004737  020100                           JSR     PC,FATCHK                      ;INC AND CHECK FOR MORE THAN 25 ERRORS
4141                                                                                         ;SOFT ERROR GENERATED BECAUSE THE
4142                                                                                         ;WRITE COMMAND IS NOT BEING CHECKED
4143                                                                                         ;HERE. IT WAS CHECKED IN CZTUXA
4144 024262                                           ERRSOFT ERRNO,WRTERR,PKTSSR            ;TSSR INCORRECT AFTER WRITE DATA
     024262  104457                                                                                   TRAP    C$ERSOFT
     024264  000152                                                                                   .WORD   106
     024266  005011                                                                                   .WORD   WRTERR
     024270  011700                                                                                   .WORD   PKTSSR
4145 024272                                  75$:     CKLOOP                                 ;LOOP IF SELECTED
     024272  104406                                                                                   TRAP    C$CLP1
4146 024274  005203                                   INC     R3                             ;BUMP RECORD SIZE
4147 024276  022703  001000                           CMP     #512.,R3                       ;END OF RECORD YET
4148 024302  001340                                   BNE     65$                            ;BR, IF MORE RECORDS TO WRITE
4149 024304  000415                                   BR      125$                           ;ENOUGH RECORDS
4150 024306                                  120$:
4151                                         ;*******************************************************************
4152                                         ;
4153                                         ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
4154                                         ;
4155                                         ;*******************************************************************
4156 024306  013701  030126                           MOV     T25BFR+6,R1                    ;QUICK CHECK FOR EOT SET
4157 024312  010102                                   MOV     R1,R2                          ;SET UP EXPECTED
```

```
4158 024314  052702  000001              BIS     #BIT0,R2                ;SET THE EOT BIT XST0
4159 024320  020102                      CMP     R1,R2                   ;IS THE EOT BIT SET IN XST0
4160 024322  001406                      BEQ     125$                    ;BR, IF SET (GOOD)
4161 024324  004737  020100              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4165 024330                              ERRDF   ERRNO,T25NET,EXPREC     ;DEVICE FATAL NOT EOT FOUND ETC.
     024330  104455                                                              TRAP    C$ERDF
     024332  000153                                                              .WORD   107
     024334  030603                                                              .WORD   T25NET
     024336  016344                                                              .WORD   EXPREC
4166 024340                      125$:
4167                             ;*****************************************************************
4168                             ;
4169                             ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
4170                             ;
4171                             ;*****************************************************************
4172 024340  004737  010434              JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4173 024344  103407                      BCS     130$                    ;BR, IF NO PROBLEM
4174 024346  010001                      MOV     R0,R1                   ;SAVE TSSR
4175 024350  004737  020100              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4179 024354                              ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
     024354  104456                                                              TRAP    C$ERHRD
     024356  000154                                                              .WORD   108
     024360  031257                                                              .WORD   T25RWN
     024362  011700                                                              .WORD   PKTSSR
4180 024364                      130$:   CKLOOP                          ;LOOP IF SELECTED
     024364  104406                                                              TRAP    C$CLP1
4181 024366                              ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     024366                                                                  L10037:
     024366  104403                                                              TRAP    C$ESUB
4182 024370  023727  002170  000031              CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
4183 024376  002402                              BLT     999$                    ;BR, IF LESS THAN 25
4184 024400  004737  020152                      JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
4165 024404                      999$:
```

```
 4187                                   ;+
 4188                                   ;TEST 1, SUBTEST 2
 4189                                   ;
 4190                                   ;VERIFIES THAT SPACE RECORDS FORWARD CAN SPACE ONE
 4191                                   ;RECORD OFF BOT AND CAUSES BOT STATUS TO BE CLEARED.
 4192                                   ;-
 4193 024404                            BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      024404                                                                          T1.2:
      024404  104402                                                                  TRAP    C$BSUB
 4194 024406  004737  031470            JSR     PC,T25REST              ;SET COMMAND PACKET
 4195 024412  004737  031562            JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
 4196 024416  004737  031624            JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
 4197                                   ;*****************************************************************
 4198                                   ;
 4199                                   ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
 4200                                   ;
 4201                                   ;*****************************************************************
 4202 024422  004737  016644            JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 4203 024426  103407                    BCS     10$                     ;BR IF INIT WAS OK
 4204 024430  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4208 024434  010001                    MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 4209 024436                            ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      024436  104455                                                                  TRAP    C$ERDF
      024440  000155                                                                  .WORD   109
      024442  003550                                                                  .WORD   SFIERR
      024444  011666                                                                  .WORD   SFIMSG
 4210 024446  012704  030100        10$:    MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 4211                                   ;*****************************************************************
 4212                                   ;
 4213                                   ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 4214                                   ;
 4215                                   ;*****************************************************************
 4216 024452  004737  010332            JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 4217 024456  103407                    BCS     15$                     ;BR, IF COMMAND ISSUED OK
 4218 024460  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4222 024464  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 4223 024466                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      024466  104456                                                                  TRAP    C$ERHRD
      024470  000156                                                                  .WORD   110
      024472  004754                                                                  .WORD   WRTMSG
      024474  011666                                                                  .WORD   SFIMSG
 4224                                   ;*****************************************************************
 4225                                   ;
 4226                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 4227                                   ;
 4228                                   ;*****************************************************************
 4229 024476  004737  010434        15$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 4230 024502  103407                    BCS     30$                     ;BR, IF NO PROBLEM
 4231 024504  010001                    MOV     R0,R1                   ;SAVE TSSR
 4232 024506  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4236 024512                            ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
      024512  104456                                                                  TRAP    C$ERHRD
      024514  000157                                                                  .WORD   111
      024516  031257                                                                  .WORD   T25RWN
      024520  011700                                                                  .WORD   PKTSSR
 4237 024522                        30$:    CKLOOP                          ;LOOP IF SELECTED
      024522  104406                                                                  TRAP    C$CLP1
```

```
                                        ;*****************************************************************
                                        ;
                                        ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
                                        ;
                                        ;*****************************************************************
024524  013701  030126                  MOV     T25BFR+6,R1             ;PICK UP XSTO
024530  010102                          MOV     R1,R2                   ;SET UP EXPECTED
024532  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
024536  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
024540  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
024542  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
024546                                  ERRHRD  ERRNO,T25BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
024546  104456                                                          TRAP    C$ERHRD
024550  000160                                                          .WORD   112
024552  030447                                                          .WORD   T25BOT
024554  016344                                                          .WORD   EXPREC
024556                          40$:    CKLOOP                          ;LOOP IF SELECTED
024556  104406                                                          TRAP    C$CLP1
024560  012737  000001  030232          MOV     #000001,T25RB           ;NUMBER OF RECORDS TO SPACE OVER
                                        ;*****************************************************************
                                        ;
                                        ;SPACE FORWARD,ACK,CVC=1 COMMAND
                                        ;
                                        ;*****************************************************************
024566  012737  140010  030230          MOV     #140010,T25PK3          ;SPACE FORWARD,ACK,CVC=1 COMMAND
024574  012704  030230                  MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
024600  010465  177776          65$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
024604  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
024610  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
024614  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
024620  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
024622  001411                          BEQ     75$                     ;BR, IF OK
024624  032701  000004                  BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
024630  001006                          BNE     75$                     ;BR, IF TSA IS SET (SUSPECT IS EOT)
024632  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
024636                                  ERRHRD  ERRNO,T25WDE,EXPREC     ;TSSR INCORRECT AFTER READ DATA
024636  104456                                                          TRAP    C$ERHRD
024640  000161                                                          .WORD   113
024642  030367                                                          .WORD   T25WDE
024644  016344                                                          .WORD   EXPREC
024646                          75$:    CKLOOP                          ;LOOP IF SELECTED
024646  104406                                                          TRAP    C$CLP1
024650                          120$:
                                        ;*****************************************************************
                                        ;
                                        ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
                                        ;
                                        ;*****************************************************************
024650  013701  030126                  MOV     T25BFR+6,R1             ;QUICK CHECK FOR BOT SET
024654  010102                          MOV     R1,R2                   ;SET UP EXPECTED
024656  042702  000002                  BIC     #BIT1,R2                ;CLEAR THE BOT BIT (XSTO)
024662  020102                          CMP     R1,R2                   ;IS THE EOT BIT SET IN XSTO
024664  001406                          BEQ     125$                    ;BR, IF SET (GOOD)
024666  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
024672                                  ERRHRD  ERRNO,T25BNC,EXPREC     ;BOT NOT CLEARED AFTER SPACE FROM BOT
024672  104456                                                          TRAP    C$ERHRD
024674  000162                                                          .WORD   114
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                024676  030742                                                          .WORD   T25BNC
                024700  016344                                                          .WORD   EXPREC
4292 024702  004737  031624          125$:   JSR     PC,T25RT3               ;CLEAN UP PACKET
4293 024706  C12737  000401  030236          MOV     #257.,T25SZ             ;SET THE CORRECT SIZE UP
4294                                 ;*****************************************************************
4295                                 ;
4296                                 ;READ DATA COMMAND IN PLACE
4297                                 ;
4298                                 ;*****************************************************************
4299 024714  012737  140001  030230          MOV     #140001,T25PK3          ;READ DATA COMMAND IN PLACE
4300 024722  013737  003072  030232          MOV     FREE,T25RB              ;READ BUFFER ADDRESS TO PACKET
4301 024730  012704  030230                  MOV     #T25PK3,R4              ;R4 = POINTER TO PACKET
4302 024734  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4303 024740  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4304 024744  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4305 024750  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4306 024754  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4307 024756  001406                          BEQ     190$                    ;BR, IF OK ESP. FUNCTION REJECT
4308 024760  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4312 024764                                  ERRHRD  ERRNO,RDERR,PKTSSR      ;TSSR INCORRECT AFTER READ DATA CMD
                024764  104456                                                          TRAP    C$ERHRD
                024766  000163                                                          .WORD   115
                024770  005104                                                          .WORD   RDERR
                024772  011700                                                          .WORD   PKTSSR
4313 024774                          190$:   CKLOOP                          ;LOOP IF SELECTED
                024774  104406                                                          TRAP    C$CLP1
4314 024776  017701  156070                  MOV     @FREE,R1                ;GET FIRST WORD FROM BUFFER
4315 025002  012702  000001                  MOV     #1,R2                   ;SET UP EXPECTED
4316 025006  020102                          CMP     R1,R2                   ;WAS RECORD NUMBERED 1
4317 025010  001406                          BEQ     200$                    ;BR, IF CORRECT RECORD
4318 025012  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4322 025016                                  ERRHRD  ERRNO,T25WNG,EXPREC     ;SHOULD HAVE BEEN RECORD NUMBER 1
                025016  104456                                                          TRAP    C$ERHRD
                025020  000164                                                          .WORD   116
                025022  030657                                                          .WORD   T25WNG
                025024  016344                                                          .WORD   EXPREC
4323 025026                          200$:   ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
                025026                                                                  L10040:
                025026  104403                                                          TRAP    C$ESUB
4324 025030  023727  002170  000031          CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
4325 025036  002402                          BLT     999$                            ;BR, IF LESS THAN 25
4326 025040  004737  020152                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
4327 025044                          999$:
```

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CZTUYA0 TU80 FRONT END PRT C    MACRO M1200  29-MAR-83 13:43  PAGE 76
TEST  1: SPACE RECORDS

 4329                                   ;+
 4330                                   ;TEST 1, SUBTEST 3
 4331                                   ;
 4332                                   ;VERIFIES THAT SPACE RECORDS REVERSE CAN SPACE BACK
 4333                                   ;OVER THE FIRST RECORD ON TAPE.
 4334                                   ;-
 4335 025044                            T1.3:   BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      025044                                                                                  TRAP    C$BSUB
      025044  104402
 4336 025046  004737  031470                    JSR     PC,T25REST              ;SET COMMAND PACKET
 4337 025052  004737  031562                    JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
 4338 025056  004737  031624                    JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
 4339                                   ;*****************************************************************
 4340                                   ;
 4341                                   ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
 4342                                   ;
 4343                                   ;*****************************************************************
 4344 025062  004737  016644                    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 4345 025066  103407                            BCS     20$                     ;BR IF INIT WAS OK
 4346 025070  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4350 025074  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 4351 025076                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      025076  104455                                                                          TRAP    C$ERDF
      025100  000165                                                                         .WORD   117
      025102  003550                                                                         .WORD   SFIERR
      025104  011666                                                                         .WORD   SFIMSG
 4352 025106  012704  030100            20$:    MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 4353                                   ;*****************************************************************
 4354                                   ;
 4355                                   ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 4356                                   ;
 4357                                   ;*****************************************************************
 4358 025112  004737  010332                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 4359 025116  103407                            BCS     25$                     ;BR, IF COMMAND ISSUED OK
 4360 025120  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4364 025124  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 4365 025126                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      025126  104456                                                                          TRAP    C$ERHRD
      025130  000166                                                                         .WORD   118
      025132  004754                                                                         .WORD   WRTMSG
      025134  011666                                                                         .WORD   SFIMSG
 4366 025136                            25$:    CKLOOP                          ;LOOP IF SELECTED
      025136  104406                                                                         TRAP    C$CLP1
 4367                                   ;*****************************************************************
 4368                                   ;
 4369                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 4370                                   ;
 4371                                   ;*****************************************************************
 4372 025140  004737  010434                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 4373 025144  103407                            BCS     30$                     ;BR, IF NO PROBLEM
 4374 025146  010001                            MOV     R0,R1                   ;SAVE TSSR
 4375 025150  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4379 025154                                    ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
      025154  104456                                                                          TRAP    C$ERHRD
      025156  000167                                                                         .WORD   119
      025160  031257                                                                         .WORD   T25RWN
      025162  011700                                                                         .WORD   PKTSSR
```

```
 4380 025164                    30$:    CKLOOP                          ;LOOP IF SELECTED
      025164  104406                                                                    TRAP    C$CLP1
 4381                           ;*****************************************************************
 4382                           ;
 4383                           ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 4384                           ;
 4385                           ;*****************************************************************
  386 025166  013701  030126            MOV     T25BFR+6,R1             ;PICK UP XST0
 4387 025172  010102                    MOV     R1,R2                   ;SET UP EXPECTED
 4388 025174  052702  000002            BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 4389 025200  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
 4390 025202  001406                    BEQ     40$                     ;BR, IF EQUAL (OK)
 4391 025204  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4395 025210                            ERRHRD  ERRNO,T25BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      025210  104456                                                                    TRAP    C$ERHRD
      025212  000170                                                                    .WORD   120
      025214  030447                                                                    .WORD   T25BOT
      025216  016344                                                                    .WORD   EXPREC
 4396 025220                    40$:    CKLOOP                          ;LOOP IF SELECTED
      025220  104406                                                                    TRAP    C$CLP1
 43..                           ;*****************************************************************
 4398                           ;
 4399                           ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 4400                           ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 4401                           ;
 4402                           ;*****************************************************************
 4403 025222  012703  000001            MOV     #000001,R3              ;NUMBER OF RECORDS TO SPACE FORWARD
 4404 025226  004737  010140            JSR     PC,SPACE                ;CALL SPACE COMMAND
 4405 025232  103410                    BCS     50$                     ;CHECK FOR ERROR
 4406 025234  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4407 025240  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4411 025244                            ERRHRD  ERRNO,T25WDE,SFFMSG     ;SPACE FORWARD FAILED
      025244  104456                                                                    TRAP    C$ERHRD
      025246  000171                                                                    .WORD   121
      025250  030367                                                                    .WORD   T25WDE
      025252  011746                                                                    .WORD   SFFMSG
 4412 025254                    50$:    CKLOOP                          ;LOOP IF SELECTED
      025254  104406                                                                    TRAP    C$CLP1
 4413 025256  012737  000001  030232        MOV     #1,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
 4414                           ;*****************************************************************
 4415                           ;
 4416                           ;SPACE REVERSE,ACK,CVC=1 COMMAND
 4417                           ;
 4418                           ;*****************************************************************
 4419 025264  012737  140410  030230        MOV     #140410,T25PK3          ;SPACE REVERSE,ACK,CVC=1 COMMAND
 4420 025272  012704  030230            MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4421 025276  010465  177776    65$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4422 025302  004737  017120            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 4423 025306  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4424 025312  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED
 4425 025316  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
 4426 025320  001406                    BEQ     75$                     ;BR, IF OK
 4427 025322  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4431 025326                            ERRHRD  ERRNO,T25WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      025326  104456                                                                    TRAP    C$ERHRD
      025330  000172                                                                    .WORD   122
      025332  030367                                                                    .WORD   T25WDE
```

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025334  011700                                                                    .WORD    PKTSSR
025336                          75$:    CKLOOP                          ;LOOP IF SELECTED
025336  104406                                                                    TRAP     C$CLP1
025340  012703  000400          120$:   MOV     #256.,R3                ;RECORD SIZE
025344  013737  003072  030232          MOV     FREE,T25RB              ;STARTING READ BUFFER ADDRESS
                                ;*******************************************************************
                                ;
                                ;READ DATA,ACK,CVC=1 COMMAND
                                ;
                                ;*******************************************************************
025352  012737  140001  030230          MOV     #140001,T25PK3          ;READ DATA,ACK,CVC=1 COMMAND
025360  012704  030230          165$:   MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
025364  010337  030236                  MOV     R3,T25SZ                ;SET UP RECORD SIZE IN PACKET
025370  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
025374  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
025400  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
025404  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
025410  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
025412  001406                          BEQ     170$                    ;BR, IF OK
025414  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
025420                                  ERRHRD  ERRNO,RDERR,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
025420  104456                                                                    TRAP     C$ERHRD
025422  000173                                                                    .WORD    123
025424  005104                                                                    .WORD    RDERR
025426  011700                                                                    .WORD    PKTSSR
025430                          170$:   CKLOOP                          ;LOOP IF SELECTED
025430  104406                                                                    TRAP     C$CLP1
025432  017701  155434                  MOV     @FREE,R1                        ;GET FIRST WORD FROM BUFFER
025436  012702  000000                  MOV     #0,R2                   ;SET UP EXPECTED
025442  020102                          CMP     R1,R2                   ;WAS RECORD NUMBERED 1
025444  001406                          BEQ     200$                    ;BR, IF CORRECT RECORD
025446  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
025452                                  ERRHRD  ERRNO,T25WNG,EXPREC     ;SHOULD HAVE BEEN RECORD NUMBER 1
025452  104456                                                                    TRAP     C$ERHRD
025454  000174                                                                    .WORD    124
025456  030657                                                                    .WORD    T25WNG
025460  016344                                                                    .WORD    EXPREC
025462                          200$:   ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
025462                                                                       L10041:
025462  104403                                                                    TRAP     C$ESUB
025464  023727  002170  000031          CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
025472  002402                          BLT     999$                            ;BR, IF LESS THAN 25
025474  004737  020152                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
025500                          999$:
```

```
                                        ;+
                                        ;TEST 1, SUBTEST 4
                                        ;
                                        ;VERIFIES THAT SPACE RECORDS FORWARD CAN SPACE A
                                        ;MULTIPLE NUMBER OF RECORDS (2 THROUGH 64K OR THE
                                        ;MAXIMUM NUMBER OF RECORDS WRITTEN ON THE TAPE,
                                        ;WHICH EVER IS LESS.
                                        ;-
025500                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
025500                                                                                  T1.4:
025500  104402                                                                          TRAP    C$BSUB
025502  004737  031470                        JSR     PC,T25REST              ;SET COMMAND PACKET
025506  004737  031562                        JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
025512  004737  031624                        JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
025516  013737  030260  030256                MOV     T25CNT,T25CN2           ;HOLD NUMBER OF RECORDS
025524  162737  000002  030256                SUB     #2,T25CN2               ;ACTUAL NUMBER OF RECORDS ON TAPE
025532  013737  030260  030262                MOV     T25CNT,T25DLY           ;SET UP REWIND DELAY COUNTER
                                        ;*****************************************************************
                                        ;
                                        ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                        ;
                                        ;*****************************************************************
025540  004737  016644                10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
025544  103427                              BCS     20$                     ;BR IF INIT WAS OK
025546                                      DELAY   250                     ;WAIT ABOUT .25 SECONDS
025546  012727  000250                                                            MOV     #250,(PC)+
025552  000000                                                                    .WORD   0
025554  013727  002116                                                            MOV     L$DLY,(PC)+
025560  000000                                                                    .WORD   0
025562  005367  177772                                                            DEC     -6(PC)
025566  001375                                                                    BNE     .-4
025570  005367  177756                                                            DEC     -22(PC)
025574  001367                                                                    BNE     .-20
025576  005337  030262                        DEC     T25DLY                  ;DEC COUNTER
025602  001356                              BNE     10$                     ;BR, IF MORE LOOPS REQUIRED
025604  016501  000000                      MOV     TSSR(R5),R1                     ;CONTENTS OF TSSR REGISTER
025610  004737  020100                      JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
025614                                      ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
025614  104455                                                                   TRAP    C$ERDF
025616  000175                                                                   .WORD   125
025620  003550                                                                   .WORD   SFIERR
025622  011666                                                                   .WORD   SFIMSG
025624                                  20$:
025624  012704  030100                      MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                        ;*****************************************************************
                                        ;
                                        ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                        ;
                                        ;*****************************************************************
025630  004737  010332                      JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
025634  103407                              BCS     25$                     ;BR, IF COMMAND ISSUED OK
025636  004737  020100                      JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
025642  010001                              MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
025644                                      ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
025644  104456                                                                   TRAP    C$ERHRD
025646  000176                                                                   .WORD   126
025650  004754                                                                   .WORD   WRTMSG
```

```
025652  011666                                                                  .WORD   SFIMSG
025654                          25$:    CKLOOP                          ;LOOP IF SELECTED
025654  104406                                                                  TRAP    C$CLP1
                                ;*******************************************************************
                                ;
                                ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                ;
                                ;*******************************************************************
025656  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
025662  103407                          BCS     30$                     ;BR, IF NO PROBLEM
025664  010001                          MOV     R0,R1                   ;SAVE TSSR
025666  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
025672                                  ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
025672  104456                                                                  TRAP    C$ERHRD
025674  000177                                                                  .WORD   127
025676  031257                                                                  .WORD   T25RWN
025700  011700                                                                  .WORD   PKTSSR
025702                          30$:    CKLOOP                          ;LOOP IF SELECTED
025702  104406                                                                  TRAP    C$CLP1
025704  013701  030256                  MOV     T25CN2,R1               ;NUMBER OF RECORDS ON TAPE
025710  012702  177776                  MOV     #65534.,R2              ;MAX IT CAN SPACE OVER
025714  020201                          CMP     R2,R1                   ;WHICH VALUE CAN WE USE
025716  003002                          BGT     46$                     ;BR, IF # WRITTEN > 64K
025720  010103                          MOV     R1,R3                   ;# WRITTEN CAN BE USED
025722  000401                          BR      47$                     ;MOVE ON
025724  010203                  46$:    MOV     R2,R3                   ;USE MAX NUMBER
025726  162703  000001          47$:    SUB     #1,R3                   ;DON'T GO ALL THE WAY YET
025732  010337  030232                  MOV     R3,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
                                ;*******************************************************************
                                ;
                                ;SPACE FORWARD,ACK,CVC=1 COMMAND
                                ;
                                ;*******************************************************************
025736  012737  140010  030230          MOV     #140010,T25PK3          ;SPACE FORWARD,ACK,CVC=1 COMMAND
025744  012704  030230                  MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
025750  013737  030256  030262  65$:    MOV     T25CN2,T25DLY           ;NUMBER OF RECORDS USED AS DELAY COUNTER
025756  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
025762  004737  017120          67$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
025766  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
025772  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
025776  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
026000  001425                          BEQ     75$                     ;BR, IF OK
026002                                  DELAY   250                     ;DELAY .25 SECONDS
026002  012727  000250                                                          MOV     #250,(PC)+
026006  000000                                                                  .WORD   0
026010  013727  002116                                                          MOV     L$DLY,(PC)+
026014  000000                                                                  .WORD   0
026016  005367  177772                                                          DEC     -6(PC)
026022  001375                                                                  BNE     .-4
026024  005367  177756                                                          DEC     -22(PC)
026^30  001367                                                                  BNE     .-20
026032  005337  030262                  DEC     T25DLY                  ;BUMP DOWN COUNTER
026036  001351                          BNE     67$                     ;BR, IF NOT AT END OF DELAY
026040  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
026044                                  ERRHRD  ERRNO,T25WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
026044  104456                                                                  TRAP    C$ERHRD
026046  000200                                                                  .WORD   128
```

```
                026050  030367                                                          .WORD   T25WDE
                026052  011700                                                          .WORD   PKTSSR
 4562           026054                  75$:    CKLOOP                  ;LOOP IF SELECTED
                026054  104406                                                          TRAP    C$CLP1
 4563           026056  012703  010000          MOV     #4096.,R3       ;RECORD SIZE
 4564           026062  013737  003072  030232  MOV     FREE,T25RB      ;STARTING READ BUFFER ADDRESS
 4565                           ;*****************************************************************
 4566                           ;
 4567                           ;READ DATA,ACK COMMAND
 4568                           ;
 4569                           ;*****************************************************************
 4570           026070  012737  100001  030230  MOV     #100001,T25PK3  ;READ DATA,ACK COMMAND
 4571           026076  012704  030230  165$:   MOV     #T25PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
 4572           026102  010337  030236          MOV     R3,T25SZ        ;SET UP RECORD SIZE IN PACKET
 4573           026106  010465  177776          MOV     R4,TSDB(R5)     ;ISSUE COMMAND
 4574           026112  004737  017120          JSR     PC,WAITF        ;WAIT FOR SSR TO SET
 4575           026116  016501  000000          MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
 4576           026122  012702  000200          MOV     #SSR,R2         ;SET UP EXPECTED
 4577           026126  020102                  CMP     R1,R2           ;ARE THEY EQUAL
 4578           026130  001411                  BEQ     170$            ;BR, IF OK
 4579           026132  032701  000004          BIT     #BIT2,R1        ;CHECK FOR TAPE STATUS ALERT
 4580           026136  001006                  BNE     170$            ;IF SET ALL IS WELL
 4581           026140  004737  020100          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4585           026144                  ERRHRD  ERRNO,RDERR,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
                026144  104456                                                          TRAP    C$ERHRD
                026146  000201                                                          .WORD   129
                026150  005104                                                          .WORD   RDERR
                026152  011700                                                          .WORD   PKTSSR
 4586           026154                  170$:   CKLOOP                  ;LOOP IF SELECTED
                026154  104406                                                          TRAP    C$CLP1
 4587           026156  017701  154710          MOV     @FREE,R1                ;GET FIRST WORD FROM BUFFER
 4588           026162  013702  030256          MOV     T25CN2,R2               ;SET UP EXPECTED
 4589           026166  162702  000001          SUB     #1,R2           ;SHOULD BE LAST RECORD
 4590           026172  020102                  CMP     R1,R2           ;WAS RECORD NUMBERED R3
 4591           026174  001405                  BEQ     200$            ;BR, IF CORRECT RECORD
 4592           026176  004737  020100          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4596           026202                  ERRHRD  ERRNO,T25WNG,EXPREC     ;SHOULD HAVE BEEN RECORD NUMBER 1
                026202  104456                                                          TRAP    C$ERHRD
                026204  000202                                                          .WORD   130
                026206  030657                                                          .WORD   T25WNG
                026210  016344                                                          .WORD   EXPREC
 4597           026212                  200$:   ENDSUB                  ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
                026212                                                          L10042:
                026212  104403                                                          TRAP    C$ESUB
 4598           026214  023727  002170  000031  CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 4599           026222  002402                  BLT     999$                    ;BR, IF LESS THAN 25
 4600           026224  004737  020152          JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 4601           026230                  999$:
```

```
                                        ;+
                                        ;TEST 1, SUBTEST 5
                                        ;
                                        ;VERIFIES THAT SPACE RECORDS REVERSE CAN SPACE A
                                        ;MULTIPLE NUMBER OF RECORDS (2 THROUGH 64K OR THE
                                        ;MAXIMUM NUMBER OF RECORDS WRITTEN ON THE TAPE
                                        ;WHICH EVER IS LESS.
                                        ;-
4612 026230                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     026230                                                                     T1.5:
     026230  104402                                                                TRAP    C$BSUB
4613 026232  004737  031470            JSR     PC,T25REST              ;SET COMMAND PACKET
4614 026236  013737  030260  030256    MOV     T25CNT,T25CN2           ;SET UP RECORD COUNTER
4615 026244  004737  031562            JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
4616 026250  004737  031624            JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
4617 026254  013737  030260  030262    MOV     T25CNT,T25DLY           ;SET UP REWIND DELAY COUNTER
                                        ;*****************************************************************
                                        ;
                                        ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                        ;
                                        ;*****************************************************************
4623 026262  004737  016644    10$:     JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4624 026266  103427                    BCS     20$                     ;BR IF INIT WAS OK
4625 026270                            DELAY   250                     ;WAIT ABOUT .25 SECONDS
     026270  012727  000250                                                     MOV     #250,(PC)+
     026274  000000                                                             .WORD   0
     026276  013727  002116                                                     MOV     L$DLY,(PC)+
     026302  000000                                                             .WORD   0
     026304  005367  177772                                                     DEC     -6(PC)
     026310  001375                                                             BNE     .-4
     026312  005367  177756                                                     DEC     -22(PC)
     026316  001367                                                             BNE     .-20
4626 026320  005337  030262            DEC     T25DLY                  ;DEC COUNTER
4627 026324  001356                    BNE     10$                     ;BR, IF MORE LOOPS REQUIRED
4628 026326  016501  000000            MOV     TSSR(R5),R1                     ;CONTENTS OF TSSR REGISTER
4629 026332  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4633 026336                            ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     026336  104455                                                             TRAP    C$ERDF
     026340  000203                                                             .WORD   131
     026342  003550                                                             .WORD   SFIERR
     026344  011666                                                             .WORD   SFIMSG
4634 026346  012704  030100    20$:     MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                        ;*****************************************************************
                                        ;
                                        ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                        ;
                                        ;*****************************************************************
4640 026352  004737  010332            JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4641 026356  103407                    BCS     25$                     ;BR, IF COMMAND ISSUED OK
4642 026360  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4646 026364  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4647 026366                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTICS FAILED
     026366  104456                                                             TRAP    C$ERHRD
     026370  000204                                                             .WORD   132
     026372  004754                                                             .WORD   WRTMSG
     026374  011666                                                             .WORD   SFIMSG
4648 026376                    25$:     CKLOOP                          ;LOOP IF SELECTED
```

```
     026376  104406                                                              TRAP    C$CLP1
                                  ;*****************************************************************
                                  ;
                                  ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                  ;
                                  ;*****************************************************************
     026400  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
     026404  103407                        BCS     30$                     ;BR, IF NO PROBLEM
     026406  010001                        MOV     R0,R1                   ;SAVE TSSR
     026410  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     026414                                ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
     026414  104456                                                              TRAP    C$ERHRD
     026416  000205                                                              .WORD   133
     026420  031257                                                              .WORD   T25RWN
     026422  011700                                                              .WORD   PKTSSR
     026424                       30$:     CKLOOP                          ;LOOP IF SELECTED
     026424  104406                                                              TRAP    C$CLP1
                                  ;*****************************************************************
                                  ;
                                  ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
                                  ;
                                  ;*****************************************************************
     026426  013701  030126                MOV     T25BFR+6,R1             ;PICK UP XST0
     026432  010102                        MOV     R1,R2                   ;SET UP EXPECTED
     026434  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
     026440  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
     026442  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
     026444  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     026450                                ERRHRD  ERRNO,T25BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     026450  104456                                                              TRAP    C$ERHRD
     026452  000206                                                              .WORD   134
     026454  030447                                                              .WORD   T25BOT
     026456  016344                                                              .WORD   EXPREC
     026460                       40$:     CKLOOP                          ;LOOP IF SELECTED
     026460  104406                                                              TRAP    C$CLP1
     026462  013701  030256                MOV     T25CN2,R1               ;NUMBER OF RECORDS ON TAPE
     026466  012702  177776                MOV     #65534.,R2              ;MAX IT CAN SPACE OVER
     026472  020201                        CMP     R2,R1                   ;WHICH VALUE CAN WE USE
     026474  003002                        BGT     46$                     ;BR, IF # WRITTEN > 64K
     026476  010103                        MOV     R1,R3                   ;# WRITTEN CAN BE USED
     026500  000401                        BR      47$                     ;MOVE ON
     026502  010203               46$:     MOV     R2,R3                   ;USE MAX NUMBER
     026504  010337  030232       47$:     MOV     R3,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
                                  ;*****************************************************************
                                  ;
                                  ;SPACE FORWARD,ACK,CVC=1 COMMAND
                                  ;
                                  ;*****************************************************************
     026510  012737  140010  030230    MOV     #140010,T25PK3          ;SPACE FORWARD,ACK,CVC=1 COMMAND
     026516  012704  030230                MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
     026522  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
     026526  013737  030256  030262    MOV     T25CN2,T25DLY           ;SET UP DELAY COUNTER
     026534  004737  017120       48$:     JSR     PC,WAITF                ;WAIT FOR SSR TO SET
     026540  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
     026544  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
     026550  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
     026552  001425                        BEQ     50$                     ;BR, IF OK
```

```
4701 026554                                DELAY   250                     ;WAIT .25 SECONDS
     026554 012727 000250                                                   MOV     #250,(PC)+
     026560 000000                                                          .WORD   0
     026562 013727 002116                                                   MOV     L$DLY,(PC)+
     026566 000000                                                          .WORD   0
     026570 005367 177772                                                   DEC     -6(PC)
     026574 001375                                                          BNE     .-4
     026576 005367 177756                                                   DEC     -22(PC)
     026602 001367                                                          BNE     .-20
4702 026604 005337 030262                  DEC     T25DLY                  ;DEC THE DELAY COUNTER
4703 026610 001351                         BNE     48$                     ;BR, IF COUNTER HASN'T EXPIRED
4704 026612 004737 020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4708 026616                                ERRHRD  ERRNO,T25WDE,EXPREC     ;TSSR INCORRECT AFTER READ DATA
     026616 104456                                                          TRAP    C$ERHRD
     026620 000207                                                          .WORD   135
     026622 030367                                                          .WORD   T25WDE
     026624 016344                                                          .WORD   EXPREC
4709 026626 013701 030256          50$:    MOV     T25CN2,R1               ;NUMBER OF RECORDS ON TAPE
4710 026632 012702 177776                  MOV     #65534.,R2              ;MAX IT CAN SPACE OVER
4711 026636 020201                         CMP     R2,R1                   ;WHICH VALUE CAN WE USE
4712 026640 003002                         BGT     55$                     ;BR, IF # WRITTEN > 64K
4713 026642 010103                         MOV     R1,R3                   ;# WRITTEN CAN BE USED
4714 026644 000401                         BR      60$                     ;MOVE ON
4715 026646 010203                 55$:    MOV     R2,R3                   ;USE MAX NUMBER
4716 026650 162703 000001          60$:    SUB     #1,R3                   ;DON'T GO ALL THE WAY YET
4717 026654 010337 030232                  MOV     R3,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
4718                                       ;*************************************************************
4719                                       ;
4720                                       ;SPACE REVERSE,ACK,CVC=1 COMMAND
4721                                       ;
4722                                       ;*************************************************************
4723 026660 012737 140410 030230           MOV     #140410,T25PK3          ;SPACE REVERSE,ACK,CVC=1 COMMAND
4724 026666 012704 030230                  MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4725 026672 010465 177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4726 026676 013737 030256 030262           MOV     T25CN2,T25DLY           ;SET UP COUNTER
4727 026704 004737 017120          70$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4728 026710 016501 000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4729 026714 012702 000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4730 026720 020102                         CMP     R1,R2                   ;ARE THEY EQUAL
4731 026722 001425                         BEQ     75$                     ;BR, IF OK
4732 026724                                DELAY   250                     ;WAIT ABOUT .25 SECONDS
     026724 012727 000250                                                   MOV     #250,(PC)+
     026730 000000                                                          .WORD   0
     026732 013727 002116                                                   MOV     L$DLY,(PC)+
     026736 000000                                                          .WORD   0
     026740 005367 177772                                                   DEC     -6(PC)
     026744 001375                                                          BNE     .-4
     026746 005367 177756                                                   DEC     -22(PC)
     026752 001367                                                          BNE     .-20
4733 026754 005337 030262                  DEC     T25DLY                  ;BUMP COUNTER DOWN
4734 026760 001351                         BNE     70$                     ;BR, IF COUNTER HASN'T EXPIRED
4735 026762 004737 020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4739 026766                                ERRHRD  ERRNO,T25WDE,EXPREC     ;TSSR INCORRECT AFTER READ DATA
     026766 104456                                                          TRAP    C$ERHRD
     026770 000210                                                          .WORD   136
     026772 030367                                                          .WORD   T25WDE
     026774 016344                                                          .WORD   EXPREC
```

```
 4740 026776                          75$:    CKLOOP                          ;LOOP IF SELECTED
      026776  104406                                                                  TRAP    C$CLP1
 4741 027000  012703  010000                  MOV     #4096.,R3               ;RECORD SIZE
 4742 027004  013737  003072  030232          MOV     FREE,T25RB              ;STARTING READ BUFFER ADDRESS
 4743                                 ;*****************************************************************
 4744                                 ;
 4745                                 ;READ DATA,ACK COMMAND
 4746                                 ;
 4747                                 ;*****************************************************************
 4748 027012  012737  100001  030230          MOV     #100001,T25PK3          ;READ DATA,ACK COMMAND
 4749 027020  012704  030230          165$:   MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4750 027024  012700  177777                  MOV     #177777,R0              ;SET ALL ONES INTO CORRECT REGISTER
 4751 027030  004737  020372                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 4752 027034  010337  030236                  MOV     R3,T25SZ                ;SET UP RECORD SIZE IN PACKET
 4753 027040  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4754 027044  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 4755 027050  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4756 027054  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 4757 027060  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 4758 027062  001411                          BEQ     170$                    ;BR, IF OK
 4759 027064  032701  000004                  BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
 4760 027070  001006                          BNE     170$                    ;BR, IF BIT SET
 4761 027072  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4765 027076                                  ERRHRD  ERRNO,RDERR,EXPREC      ;TSSR INCORRECT AFTER READ DATA
      027076  104456                                                                  TRAP    C$ERHRD
      027100  000211                                                                 .WORD   137
      027102  005104                                                                 .WORD   RDERR
      027104  016344                                                                 .WORD   EXPREC
 4766 027106                          170$:   CKLOOP                          ;LOOP IF SELECTED
      027106  104406                                                                  TRAP    C$CLP1
 4767 027110  017701  153756                  MOV     @FREE,R1                        ;GET FIRST WORD FROM BUFFER
 4768 027114  012702  000001                  MOV     #1,R2                   ;SET UP EXPECTED
 4769 027120  020102                          CMP     R1,R2                   ;WAS RECORD NUMBERED R3
 4770 027122  001406                          BEQ     200$                    ;BR, IF CORRECT RECORD
 4771 027124  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4775 027130                                  ERRHRD  ERRNO,T25WNH,EXPREC     ;SHOULD HAVE BEEN RECORD NUMBER 1
      027130  104456                                                                  TRAP    C$ERHRD
      027132  000212                                                                 .WORD   138
      027134  031032                                                                 .WORD   T25WNH
      027136  016344                                                                 .WORD   EXPREC
 4776 027140                          200$:   ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      027140                                                                              L10043:
      027140  104403                                                                  TRAP    C$ESUB
 4777 027142  023727  002170  000031                  CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
 4778 027150  002402                                  BLT     999$                    ;BR, IF LESS THAN 25
 4779 027152  004737  020152                          JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 4780 027156                          999$:
```

```
                                        ;+
                                        ;TEST 1. SUBTEST 6
                                        ;
                                        ;VERIFIES THAT SPACE RECORDS REVERSE ISSUED WHILE THE
                                        ;TAPE IS AT BOT RESULTS IN FUNCTION REJECT TERMINATION
                                        ;WITH THE NONEXECUTABLE FUNCTION (NEF) ERROR BIT SET.
                                        ;-
027156                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
027156                                                                                      T1.6:
027156  104402                                                                              TRAP    C$BSUB
4790 027160  004737  031470                       JSR     PC,T25REST              ;SET COMMAND PACKET
4791 027164  004737  031562                       JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
4792 027170  004737  031624                       JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
                                        ;*****************************************************************
                                        ;
                                        ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                        ;
                                        ;*****************************************************************
4798 027174  004737  016644                       JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4799 027200  103407                               BCS     20$                     ;BR IF INIT WAS OK
4800 027202  004737  020100                       JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4804 027206  010001                               MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4805 027210                                       ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
027210  104455                                                                              TRAP    C$ERDF
027212  000213                                                                              .WORD   139
027214  003550                                                                              .WORD   SFIERR
027216  011666                                                                              .WORD   SFIMSG
4806 027220  012704  030100                20$:    MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                        ;*****************************************************************
                                        ;
                                        ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                        ;
                                        ;*****************************************************************
4812 027224  004737  010332                       JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4813 027230  103407                               BCS     25$                     ;BR, IF COMMAND ISSUED OK
4814 027232  004737  020100                       JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4818 027236  010001                               MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4819 027240                                       ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
027240  104456                                                                              TRAP    C$ERHRD
027242  000214                                                                              .WORD   140
027244  004754                                                                              .WORD   WRTMSG
027246  011666                                                                              .WORD   SFIMSG
4820 027250                                25$:    CKLOOP                          ;LOOP IF SELECTED
027250  104406                                                                              TRAP    C$CLP1
                                        ;*****************************************************************
                                        ;
                                        ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                        ;
                                        ;*****************************************************************
4826 027252  004737  010434                       JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4827 027256  103407                               BCS     30$                     ;BR, IF NO PROBLEM
4828 027260  010001                               MOV     R0,R1                   ;SAVE TSSR
4829 027262  004737  020100                       JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4833 027266                                       ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
027266  104456                                                                              TRAP    C$ERHRD
027270  000215                                                                              .WORD   141
027272  031257                                                                              .WORD   T25RWN
```

```
                027274  011700                                                  .WORD   PKTSSR
4834            027276                  30$:    CKLOOP                          ;LOOP IF SELECTED
                027276  104406                                                  TRAP    C$CLP1
4835                                    ;*****************************************************************
4836                                    ;
4837                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
4838                                    ;
4839                                    ;*****************************************************************
4840            027300  013701  030126          MOV     T25BFR+6,R1             ;PICK UP XST0
4841            027304  010102                  MOV     R1,R2                   ;SET UP EXPECTED
4842            027306  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4843            027312  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
4844            027314  001406                  BEQ     40$                     ;BR, IF EQUAL (OK)
4845            027316  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4849            027322                          ERRHRD  ERRNO,T25BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                027322  104456                                                  TRAP    C$ERHRD
                027324  000216                                                  .WORD   142
                027326  030447                                                  .WORD   T25BOT
                027330  016344                                                  .WORD   EXPREC
4850            027332                  40$:    CKLOOP                          ;LOOP IF SELECTED
                027332  104406                                                  TRAP    C$CLP1
4851            027334  012737  000001  030232          MOV     #1,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
4852                                    ;*****************************************************************
4853                                    ;
4854                                    ;SPACE REVERSE,ACK COMMAND
4855                                    ;
4856                                    ;*****************************************************************
4857            027342  012737  100410  030230          MOV     #100410,T25PK3          ;SPACE REVERSE,ACK COMMAND
4858            027350  012704  030230          MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4859            027354  010465  177776  65$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4860            027360  004737  017120          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4861            027364  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4862            027370  012702  100206          MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
4863            027374  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
4864            027376  001406                  BEQ     75$                     ;BR, IF OK
4865            027400  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4869            027404                          ERRHRD  ERRNO,T25WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
                027404  104456                                                  TRAP    C$ERHRD
                027406  000217                                                  .WORD   143
                027410  030367                                                  .WORD   T25WDE
                027412  011700                                                  .WORD   PKTSSR
4870            027414                  75$:    CKLOOP                          ;LOOP IF SELECTED
                027414  104406                                                  TRAP    C$CLP1
4871                                    ;*****************************************************************
4872                                    ;
4873                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
4874                                    ;
4875                                    ;*****************************************************************
4876            027416  013701  030126          MOV     T25BFR+6,R1             ;GET XST0 STATUS WORD
4877            027422  010102                  MOV     R1,R2                   ;SET UP EXPECTED
4878            027424  052702  002000          BIS     #BIT10,R2               ;SET THE NEF BIT
4879            027430  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
4880            027432  001406                  BEQ     170$                    ;BR, IF EQUAL (GOOD)
4881            027434  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4885            027440                          ERRHRD  ERRNO,T25NEF,EXPREC     ;NEF SHOULD BE SET
                027440  104456                                                  TRAP    C$ERHRD
                027442  000220                                                  .WORD   144
```

```
        027444  031115                                                  .WORD   T2SNEF
        027446  016344                                                  .WORD   EXPREC
 4886   027450                          170$:   ENDSUB
        027450                                                  L10044:
        027450  104403                                                  TRAP    C$ESUB
 4887   027452  023727  002170  000031          CMP     FATFLG,#25.     ;IS ERROR COUNT AT 25
 4888   027460  002402                          BLT     999$            ;BR, IF LESS THAN 25
 4889   027462  004737  020152                  JSR     PC,CKDROP       ;TRY TO DROP THE UNIT
 4890   027466                          999$:
```

```
                                        ;+
                                        ;TEST 1, SUBTEST 7
                                        ;
                                        ;VERIFIES THAT A SPACE RECORDS REVERSE COMMAND THAT
                                        ;CUASES THE TAPE TO RUN INTO BOT (WITH THE TAPE NOT
                                        ;INITIALLY AT BOT) CAUSES A TAPE STATUS ALERT
                                        ;TERMINATION AND SETS THE REVERSE INTO BOT (RIB)
                                        ;STATUS BIT
                                        ;-
4901 027466                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     027466                                                                         T1.7:
     027466  104402                                                                TRAP    C$BSUB
4902 027470  004737  031470             JSR     PC,T25REST              ;SET COMMAND PACKET
4903 027474  004737  031552             JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
4904 027500  004737  031624             JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
4905                                    ;*****************************************************************
4906                                    ;
4907                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
4908                                    ;
4909                                    ;*****************************************************************
4910 027504  004737  016644             JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4911 027510  103407                     BCS     20$                     ;BR IF INIT WAS OK
4912 027512  004737  020100             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4916 027516  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4917 027520                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     027520  104455                                                                TRAP    C$ERDF
     027522  000221                                                                .WORD   145
     027524  003550                                                                .WORD   SFIERR
     027526  011666                                                                .WORD   SFIMSG
4918 027530  012704  030100         20$:    MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4919                                    ;*****************************************************************
4920                                    ;
4921                                    ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
4922                                    ;
4923                                    ;*****************************************************************
4924 027534  004737  010332             JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4925 027540  103407                     BCS     25$                     ;BR, IF COMMAND ISSUED OK
4926 027542  004737  020100             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4930 027546  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4931 027550                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     027550  104456                                                                TRAP    C$ERHRD
     027552  000222                                                                .WORD   146
     027554  004754                                                                .WORD   WRTMSG
     027556  011666                                                                .WORD   SFIMSG
4932 027560                         25$:    CKLOOP                          ;LOOP IF SELECTED
     027560  104406                                                                TRAP    C$CLP1
4933                                    ;*****************************************************************
4934                                    ;
4935                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
4936                                    ;
4937                                    ;*****************************************************************
4938 027562  004737  010434             JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4939 027566  103407                     BCS     30$                     ;BR, IF NO PROBLEM
4940 027570  010001                     MOV     R0,R1                   ;SAVE TSSR
4941 027572  004737  020100             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4945 027576                             ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
     027576  104456                                                                TRAP    C$ERHRD
```

```
                027600  000223                                                  .WORD   147
                027602  031257                                                  .WORD   T25RWN
                027604  011700                                                  .WORD   PKTSSR
 4946           027606                  30$:    CKLOOP                          ;LOOP IF SELECTED
                027606  104406                                                  TRAP    C$CLP1
 4947                                   ;*****************************************************************
 4948                                   ;
 4949                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 4950                                   ;
 4951                                   ;*****************************************************************
 4952           027610  013701  030126              MOV     T25BFR+6,R1             ;PICK UP XST0
 4953           027614  010102                      MOV     R1,R2                   ;SET UP EXPECTED
 4954           027616  052702  00002               BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 4955           027622  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
 4956           027624  001406                      BEQ     40$                     ;BR, IF EQUAL (OK)
 4957           027626  004737  020100              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4961           027632                          ERRHRD  ERRNO,T25BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                027632  104456                                                  TRAP    C$ERHRD
                027634  000224                                                  .WORD   148
                027636  030447                                                  .WORD   T25BOT
                027640  016344                                                  .WORD   EXPREC
 4962           027642  012737  000001  030232  40$:    MOV     #1,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
 4963                                   ;*****************************************************************
 4964                                   ;
 4965                                   ;SPACE FORWARD,IE,ACK,CVC=1 COMMAND
 4966                                   ;
 4967                                   ;*****************************************************************
 4968           027650  012737  140210  030230          MOV     #140210,T25PK3          ;SPACE FORWARD,IE,ACK,CVC=1 COMMAND
 4969           027656  012704  030230                  MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4970           027662  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4971           027666  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 4972           027672  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4973           027676  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 4974           027702  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 4975           027704  001406                          BEQ     75$                     ;BR, IF OK
 4976           027706  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 4980           027712                              ERRHRD  ERRNO,T25WDE,EXPREC     ;TSSR INCORRECT AFTER READ DATA
                027712  104456                                                      TRAP    C$ERHRD
                027714  000225                                                      .WORD   149
                027716  030367                                                      .WORD   T25WDE
                027720  016344                                                      .WORD   EXPREC
 4981           027722                  75$:    CKLOOP                          ;LOOP IF SELECTED
                027722  104406                                                  TRAP    C$CLP1
 4982           027724  012737  000020  030232          MOV     #20,T25RB               ;NUMBER OF RECORDS TO SPACE OVER
 4983                                   ;*****************************************************************
 4984                                   ;
 4985                                   ;SPACE REVERSE,IE,ACK COMMAND
 4986                                   ;
 4987                                   ;*****************************************************************
 4988           027732  012737  100610  030230          MOV     #100610,T25PK3          ;SPACE REVERSE,IE,ACK COMMAND
 4989           027740  012704  030230                  MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4990           027744  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4991           027750  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 4992           027754  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4993           027760  012702  100204                  MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED
 4994           027764  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 4995           027766  001406                          BEQ     175$                    ;BR, IF OK
```

```
CZTUYA0 TU80 FRONT END PRT C    MACRO M1200  29-MAR-83 13:43  PAGE 81-2
TEST  1: SPACE RECORDS

 4996 027770  004737  020100                JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5000 027774                                ERRHRD  ERRNO,T25WDE,EXPREC ;TSSR INCORRECT AFTER READ DATA
      027774  104456                                                    TRAP    C$ERHRD
      027776  000226                                                    .WORD   150
      030000  030367                                                    .WORD   T25WDE
      030002  016344                                                    .WORD   EXPREC
 5001 030004                        175$:   CKLOOP                      ;LOOP IF SELECTED
      030004  104406                                                    TRAP    C$CLP1
 5002 030006  013701  030134                MOV     T25BFR+14,R1        ;GET XST3 STATUS WORD
 5003 030012  010102                        MOV     R1,R2               ;SET UP EXPECTED
 5004 030014  052702  000001                BIS     #BIT0,R2            ;SET THE RIB BIT
 5005 030020  020102                        CMP     R1,R2               ;ARE THEY EQUAL
 5006 030022  001406                        BEQ     180$                ;BR, IF EQUAL (GOOD)
 5007 030024  004737  020100                JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5011 030030                                ERRHRD  ERRNO,T25NEF,EXPREC ;NEF SHOULD BE SET
      030030  104456                                                    TRAP    C$ERHRD
      030032  000227                                                    .WORD   151
      030034  031115                                                    .WORD   T25NEF
      030036  016344                                                    .WORD   EXPREC
 5012 030040                        180$:   ENDSUB                      ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
      030040                                                                  L10045:
      030040  104403                                                    TRAP    C$ESUB
 5013 030042  023727  002170  000031        CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 5014 030050  002402                        BLT     999$                    ;BR, IF LESS THAN 25
 5015 030052  004737  020152                JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 5016 030056                        999$:
 5017 030056  004737  017354                JSR     PC,TSTLOOP          ;DO WE NEED TO ITERATE TEST
 5018 030062  103002                        BCC     193$                ;BR, IF NO LOOP REQUIRED
 5019 030064  000137  023704                JMP     T25LOOP             ;EXECUTE AGAIN
 5020 030070                        193$:
 5021 030070                                EXIT    TST                 ;ALL DONE THIS TEST
      030070  104432                                                    TRAP    C$EXIT
      030072  001562                                                    .WORD   L10036-.
```

```
5023                                    ;+
5024                                    ;LOCAL STORAGE FOR THIS TEST
5025                                    ;-
5027 030074                                     .BLKB   10-<.-TUV2A&7>
5029 030100                             T25PACKET:                      ;COMMAND PACKET FOR TEST
5030 030100  100004                             .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH  ACK
5031 030102  030110                             .WORD   T25DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
5032 030104  000000                             .WORD   0
5033 030106  000010                             .WORD   8.              ;STARTING VALUE OF BLOCK SIZE
5034 030110                             T25DATA:                        ;CHARACTERISTICS DATA BLOCK
5035 030110  030120                             .WORD   T25BFR          ;ADDRESS OF MESSAGE BUFFER
5036 030112  000000                             .WORD   0
5037 030114  000012                             .WORD   10.             ;LENGTH OF MESSAGE BUFFER
5038 030116  000000                             .WORD   0
5039 030120                             T25BFR: .BLKW   25.             ;MESSAGE BUFFER
5040                                    ;
5041                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
5042                                    ;
5044 030202                                     .BLKB   10-<.-TUV2A&7>
5046 030210                             T25PK2:
5047 030210  100006                             .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
5048 030212  030240                             .WORD   T25BF2          ;ADDRESS OF SELECT BLOCK DATA
5049 030214  000000                             .WORD   0
5050 030216  000006                             .WORD   6.              ;SIZE OF DATA PACKET
5051
5053 030220                                     .BLKB   10-<.-TUV2A&7>
5055 030230                             T25PK3:
5056 030230  100005                             .WORD   100005          ;READ COMMAND, AND ACK
5057 030232                             T25RB:
5058 030232  003072                     T25WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
5059 030234  000000                             .WORD   0
5060 030236  000000                     T25SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
5061                                            .EVEN
5062                                    ;
5063                                    ;
5064                                    ;
5065 030240                             T25BF2:
5066 030240     010                     T25BS0: .BYTE   10              ;BSEL0 AREA
5067 030241     200                     T25BS1: .BYTE   200             ;BSEL1 AREA
5068 030242  000000                     T25S2:  .WORD   0               ;SEL 2 AREA
5069 030244  000000                     T25S3:  .WORD   0               ;DATA AREA
5070                                    ;
5071                                    ;
5072                                            .EVEN
5073                                    ;TAPE MOTION PACKET COMMAND VALUES
5074
5075 030246  100005                     T25RN:  .WORD   100005          ;READ DATA (NEXT)
5076 030250  100405                     T25WDR: .WORD   100405          ;READ DATA RETRY
5077 030252  102005                     T25CON: .WORD   102005          ;WRITE CONTINOUS
5078 030254  177777                             .WORD   177777          ;END OF DATA
5079
5080
```

```
                                        T25CN2: .WORD   0                       ;COUNTER FOR RECORDS
                                        T25CNT: .WORD   0                       ;COUNTER FOR RECORDS
                                        T25DLY: .WORD   0                       ;COUNTER FOR RECORDS

                                        ;+
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-

                                        T210FL: .ASCIZ  'DRIVE IS OFF-LINE'
                                        T25SSR: .ASCIZ  'WRITE SUBSYSTEM Miscellaneous Read Status Failed'
                                        T25WDE: .ASCIZ  'TSSR Not Correct After POSITION (SPACE) Command'
                                        T25BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
                                        T25TM:  .ASCIZ  'TSSR Not Correct After POSITION (Space Command) Reject'
                                        T25NET: .ASCIZ  'Write Tape, Status Alert, But No EOT Sensed'
                                        T25WNG: .ASCIZ  'Space Forward Failed To Position On Correct Record'
                                        T25BNC: .ASCIZ  'Space Forward, From BOT, Failed To Clear BOT Indication'
                                        T25WNH: .ASCIZ  'Space Reverse Failed To Position On Correct Record'
                                        T25NEF: .ASCIZ  'Space Reverse, At BOT, Failed To Set NEF (XST0)'
                                        T25RIB: .ASCIZ  'Space Reverse, Into BOT, Failed To Set RIB (XST3)'
                                        T25RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
                                        T25OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
                                        T25WDC: .ASCIZ  'TSSR Not Correct After READ DATA Command'
                                        TST25ID:        .ASCIZ  'Space Records'
                                                .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

                                        T25REST:
                                                SAVREG                          ;SAVE THE REGISTERS
                                                MOV     #T25PACKET,R1           ;START OF THE PACKET
                                                MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
                                                MOV     #T25DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
                                                CLR     (R1)+                   ;EXTENDED ADDRESS
                                                MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
                                                MOV     #T25BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
                                                CLR     (R1)+
                                                MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
                                                CLR     (R1)+
                                                MOV     #0,(R1)                 ;SELECT DRIVE ZERO
                                                MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
                                        64$:    MOV     #177777,T25BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
                                                TST     -(R2)                   ;NEXT LOCATION
                                                CMP     #0,R2                   ;IS R2 AT ZERO YET
                                                BNE     64$                     ;KEEP GOING UNTIL DONE
                                                RTS     PC                      ;RETURN

                                        T25RT2:
                                                SAVREG                          ;SAVE THE REGISTERS
                                                MOV     #T25PK2,R1              ;START OF THE PACKET
                                                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
                                                MOV     #T25BF2,(R1)+           ;ADDRESS OF DATA BLOCK
                                                CLR     (R1)+                   ;EXTENDED ADDRESS
```

```
 5139 031604  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 5140 031610  005021                        CLR     (R1)+
 5141 031612  012701  030240                MOV     #T25BF2,R1              ;POINT TO DATA SEL AREA
 5142 031616  005021                        CLR     (R1)+
 5143 031620  005011                        CLR     (R1)
 5144 031622  000207                        RTS     PC                      ;RETURN
 5145 031624                        T25PT3:
 5146 031624                                SAVREG                          ;SAVE THE REGISTERS
 5147 031630  012701  030230                MOV     #T25PK3,R1              ;START OF THE PACKET
 5148 031634  012721  000000                MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK,
 5149 031640  012721  000000                MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
 5150 031644  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
 5151 031646  012721  000000                MOV     #0,(R1)+                ;SIZE OF DATA BLOCK IN BYTES
 5152 031652  000207                        RTS     PC                      ;RETURN
 5153 031654                                ENDTST
      031654                                                        L10036:
      031654  104401                                                       TRAP    C$ETST
```

```
                                        .SBTTL  TEST  2: REREADS
                                ;+
                                ;
                                ;THIS TEST VERIFIES THAT THE REREAD PREVIOUS AND REREAD NEXT
                                ;COMMANDS OPERATE PROPERLY. VARIOUS COMBINATIONS OF ODD AND EVEN
                                ;DATA BUFFER BOUNDRIES, RECORD SIZES (UP TO 64K BYTES IF MEMORY
                                ;SPACE IS AVAILIABLE), AND BYTE-SWAP (SWP) AND OPPOSITE (OPP)
                                ;CONRTOL ARE USED. ALSO TESTED ARE PROPER TERMINATIONS ON
                                ;EXCEPTIONAL OR ERROR CONDITIONS: RECORD LENGTH LONG, RECORD
                                ;LENGTH SHORT, READ REVERSE AT BOT, ILLEGAL DATA BUFFER ADDRESSES,
                                ;AND DATA BUFFERS IN NONEXISTENT MEMORY.
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 15 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
031656                                  BGNTST
031656                                                                  T2::
031656  005037  002170                    CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
031662  005037  002100                    CLR     KTFLG           ;HOLD OFF KT11
031666  012737  005764  002146            MOV     #EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
031674  004737  020244                    JSR     PC,KTOFF                ;DON'T NEED KT11
031700  012700  050627                    MOV     #TST26ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
031704  004737  017406                    JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
031710  012737  000001  002164            MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
031716  005037  046076                    CLR     T26CNT                  ;CLEAR TAPE RECORD COUNTER
                                ;+
                                ;
                                ;TEST 2, SUBTEST 1
                                ;
                                ;
                                ;VERIFIES THAT THE REREAD PREVIOUS COMMAND
                                ;OPERATES PROPERLY. THE TAPE IS FIRST
                                ;REWOUND AND THEN WRITTEN WITH A SERIES OF TEST
                                ;RECORDS VARYING IN LENGTH AND DATA CONTENT. THE TAPE
                                ;IS THEN REWOUND AGAIN. FOR EACH TEST RECORD, THE
                                ;TAPE IS SPACED FORWARD ONE RECORD AND A REREAD
                                ;PREVIOUS COMMAND ISSUED. RESULTS (STATUS, DATA,
                                ;ETC.) ARE VERIFIED. THE BYTE COUNT ON EACH REREAD
                                ;PREVIOUS COMMAND IS SET TO THE LENGTH OF THE EXPECTED
                                ;RECORD, SO NO EXCEPTIONAL CONDITIONS SHOULD OCCUR.
                                ;
                                ;
                                ;-
                                ;
031722                          T26LOOP:
                                ;
031722                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
031722                                                                          T2.1:
031722  104402                                                                  TRAP    C$BSUB
031724  004737  050640                    JSR     PC,T26REST              ;SET COMMAND PACKET
031730  004737  050732                    JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
031734  004737  050774                    JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
031740  012737  176750  046104            MOV     #65000.,T26DLY                  ;SET UP DELAY COUNTER
                                ;
```

```
                                ;*****************************************************************
                                ;
                                ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                ;
                                ;*****************************************************************

031746  004737  016644          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
031752  103426                          BCS     20$                     ;BR IF INIT WAS OK
031754                                  DELAY   250                     ;DELAY FOR A REWIND TO FINISH
031754  012727  000250                                                          MOV     #250,(PC)+
031760  000000                                                                  .WORD   0
031762  013727  002116                                                          MOV     L$DLY,(PC)+
031766  000000                                                                  .WORD   0
031770  005367  177772                                                          DEC     -6(PC)
031774  001375                                                                  BNE     .-4
031776  005367  177756                                                          DEC     -22(PC)
032002  001367                                                                  BNE     .-20
032004  005337  046104                  DEC     T26DLY                  ;DEC COUNTER
032010  001356                          BNE     10$                     ;BR, IF DELAY NOT READY
032012  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
032016  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
032020                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
032020  104455                                                                  TRAP    C$ERDF
032022  000311                                                                  .WORD   201
032024  003550                                                                  .WORD   SFIERR
032026  011666                                                                  .WORD   SFIMSG
032030                          20$:

032030  012704  045720                  MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

                                ;*****************************************************************
                                ;
                                ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                ;
                                ;*****************************************************************

032034  004737  010332                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
032040  103407                          BCS     26$                     ;BR, IF COMMAND ISSUED OK
032042  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
032046  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
032050                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
032050  104456                                                                  TRAP    C$ERHRD
032052  000312                                                                  .WORD   202
032054  004754                                                                  .WORD   WRTMSG
032056  011666                                                                  .WORD   SFIMSG
032060                          26$:    CKLOOP                          ;LOOP IF SELECTED
032060  104406                                                                  TRAP    C$CLP1

                                ;*****************************************************************
                                ;
                                ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                ;
                                ;*****************************************************************

032062  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
032066  103413                          BCS     30$                     ;BR, IF NO PROBLEM
032070  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
```

```
5259 032074  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
5260 032100  010004                         MOV     R0,R4                   ;PACKET ADDRESS SET UP
5261 032102  004737  020100                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5265 032106                                 ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     032106  104456                                                         TRAP    C$ERHRD
     032110  000313                                                         .WORD   203
     032112  047404                                                         .WORD   T26RWN
     032114  011700                                                         .WORD   PKTSSR
5266 032116                         30$:    CKLOOP                          ;LOOP IF SELECTED
     032116  104406                                                         TRAP    C$CLP1
5267
5268                                ;*****************************************************************
5269                                ;
5270                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
5271                                ;
5272                                ;*****************************************************************
5273
5274 032120  013701  045746                MOV     T26BFR+6,R1             ;PICK UP XST0
5275 032124  010102                         MOV     R1,R2                   ;SET UP EXPECTED
5276 032126  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5277 032132  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
5278 032134  001406                         BEQ     40$                     ;BR, IF EQUAL (OK)
5279 032136  004737  020100                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5283 032142                                 ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     032142  104456                                                         TRAP    C$ERHRD
     032144  000314                                                         .WORD   204
     032146  047115                                                         .WORD   T26BOT
     032150  016344                                                         .WORD   EXPREC
5284 032152                         40$:    CKLOOP                          ;LOOP IF SELECTED
     032152  104406                                                         TRAP    C$CLP1
5285 032154  012703  000400                MOV     #256.,R3                ;RECORD SIZE
5286 032160  013737  003072  046052         MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
5287
5288                                ;*****************************************************************
5289                                ;
5290                                ;WRITE DATA,ACK,CVC=1 COMMAND
5291                                ;
5292                                ;*****************************************************************
5293
5294 032166  012737  140005  046050         MOV     #140005,T26PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5295 032174  012704  046050                 MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5296 032200                         65$:
5297 032200  010300                         MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
5298 032202  004737  020372                 JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
5299 032206  010337  046056                 MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
5300 032212  010465  177776                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5301 032216  004737  017120                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5302 032222  016501  000000                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5303 032226  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
5304 032232  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
5305 032234  001406                         BEQ     75$                     ;BR, IF OK
5306 032236  004737  020100                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5310                                                                        ;SOFT ERROR GENERATED BECAUSE THE
5311                                                                        ;WRITE COMMAND IS NOT BEING CHECKED
5312                                                                        ;HERE. IT WAS CHECKED IN CZTUXA
5313 032242                                 ERRSOFT ERRNO,WRTERR,EXPREC     ;TSSR INCORRECT AFTER WRITE DATA
     032242  104457                                                         TRAP    C$ERSOFT
```

```
        032244  000315                                                          .WORD   205
        032246  005011                                                          .WORD   URTERR
        032250  016344                                                          .WORD   EXPREC
   5314 032252                          75$:    CKLOOP                      ;LOOP IF SELECTED
        032252  104406                                                          TRAP    C$CLP1
   5315 032254  005723                          TST     (R3)+               ;BUMP RECORD SIZE
   5316 032256  022703  000414                  CMP     #268.,R3            ;END OF RECORD YET
   5317 032262  001346                          BNE     65$                 ;BR, IF MORE RECORDS TO WRITE
   5318 032264                          80$:    CKLOOP                      ;LOOP IF SELECTED
        032264  104406                                                          TRAP    C$CLP1
   5319 032266                          120$.
   5320
   5321                                 ;*****************************************************************
   5322                                 ;
   5323                                 ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
   5324                                 ;
   5325                                 ;*****************************************************************
   5326
   5327 032266  004737  010434                  JSR     PC,REWIND           ;CALL TAPE REWIND COMMAND
   5328 032272  103413                          BCS     130$                ;BR, IF NO PROBLEM
   5329 032274  016501  000000                  MOV     TSSR(R5),R1         ;GET TSSR
   5330 032300  012702  000200                  MOV     #SSR,R2             ;SET UP EXPECTED TSSR
   5331 032304  010004                          MOV     R0,R4               ;PACKET ADDRESS SET UP
   5332 032306  004737  020100                  JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5336 032312                                  ERRHRD  ERRNO,T26RWN,PKTSSR ;REWIND NOT ACCEPTED
        032312  104456                                                          TRAP    C$ERHRD
        032314  000316                                                          .WORD   206
        032316  047404                                                          .WORD   T26RWN
        032320  011700                                                          .WORD   PKTSSR
   5337 032322                          130$:   CKLOOP                      ;LOOP IF SELECTED
        032322  104406                                                          TRAP    C$CLP1
   5338
   5339                                 ;*****************************************************************
   5340                                 ;
   5341                                 ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
   5342                                 ;
   5343                                 ;*****************************************************************
   5344
   5345 032324  013701  045746                  MOV     T26BFR+6,R1         ;PICK UP XST0
   5346 032330  010102                          MOV     R1,R2               ;SET UP EXPECTED
   5347 032332  052702  000002                  BIS     #BIT1,R2            ;SET BOT BIT IN EXPECTED
   5348 032336  020102                          CMP     R1,R2               ;DOES EXP = REC'D
   5349 032340  001406                          BEQ     140$                ;BR, IF EQUAL (OK)
   5350 032342  004737  020100                  JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
   5354 032346                                  ERRHRD  ERRNO,T26BOT,PKTSSR ;TAPE NOT AT BOT AFTER REWIND
        032346  104456                                                          TRAP    C$ERHRD
        032350  000317                                                          .WORD   207
        032352  047115                                                          .WORD   T26BOT
        032354  011700                                                          .WORD   PKTSSR
   5355 032356                          140$:   CKLOOP                      ;LOOP IF SELECTED
        032356  104406                                                          TRAP    C$CLP1
   5356 032360  012737  000400  046102          MOV     #256.,T26RSZ        ;SET RECORD SIZE
   5357
   5358                                 ;*****************************************************************
   5359                                 ;
   5360                                 ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
   5361                                 ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
```

```
CZTUYAO TU80 FRONT END PRT C    MACRO M1200  29-MAR-83 13:43  PAGE 84-4
TEST  2: REREADS

                                        ;
                                        ;*************************************************************************
                                        ;
032366  012703  000001          145$:   MOV     #1,R3                   ;SPACE ONE RECORD PARAMETER
032372  004737  010140                  JSR     PC,SPACE                ;CALL SPACE ROUTINE
032376  103412                          BCS     150$                    ;BR, IF NO PROBLEM WITH SPACE COMMAND
032400  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
032404  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
032410  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
032414                                  ERRHRD  ERRNO,T26SC,EXPREC      ;POSITION (SPACE RECORDS) FAILED
032414  104456                                                                  TRAP    C$ERHRD
032416  000320                                                                  .WORD   208
032420  046517                                                                  .WORD   T26SC
032422  016344                                                                  .WORD   EXPREC
032424                          150$:
032424  013703  046102                  MOV     T26RSZ,R3               ;RECORD SIZE
032430  013737  003072  046052          MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS

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

032436  012737  141001  046050          MOV     #141001,T26PK3          ;REREREAD DATA,CVC=1,ACK COMMAND
032444  012704  046050          165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
032450  010337  046056                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
032454  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
032460  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
032464  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
032470  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
032474  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
032476  001406                          BEQ     170$                    ;BR, IF OK
032500  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
032504                                  ERRHRD  ERRNO,T26WDC,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
032504  104456                                                                  TRAP    C$ERHRD
032506  000321                                                                  .WORD   209
032510  047740                                                                  .WORD   T26WDC
032512  011700                                                                  .WORD   PKTSSR
032514                          170$:   CKLOOP                          ;LOOP IF SELECTED
032514  104406                                                                  TRAP    C$CLP1
032516  013702  003072                  MOV     FREE,R2                 ;CURRENT BUFFER ADDRESS TO R2
032522  010304                          MOV     R3,R4                   ;CURRENT RECORD SIZE
032524  162704  000400                  SUB     #256.,R4                ;FIRST LOCATION IN BUFFER
032530  060204                  173$:   ADD     R2,R4                   ;SET UP POINTER
032532  021403                          CMP     (R4),R3                 ;CHECK DATA READ (R3=DATA ALSO)
032534  001410                          BEQ     180$                    ;BR, IF ALL IS WELL
032536  011401                          MOV     (R4),R1                 ;RECD DATA
032540  010302                          MOV     R3,R2                   ;EXPECTED DATA
032542  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
032546                                  ERRHRD  ERRNO,T26DTA,EXPREC     ;DATA READ NOT = WRITTEN
032546  104456                                                                  TRAP    C$ERHRD
032550  000322                                                                  .WORD   210
032552  047162                                                                  .WORD   T26DTA
032554  016344                                                                  .WORD   EXPREC
032556                          180$:   CKLOOP                          ;LOOP IF SELECTED
032556  104406                                                                  TRAP    C$CLP1
```

```
 5414 032560  005724                          TST     (R4)+                ;BUMP TO NEXT LOCATION
 5415 032562  160204                          SUB     R2,R4                ;CORRECT RECORDS SIZE VALUE
 5416 032564  020403                          CMP     R4,R3                ;END OF RECORD YET
 5417 032566  001360                          BNE     173$                 ;BR, IF NOT AT END OF RECORD
 5418 032570  005723                          TST     (R3)+                ;BUMP RECORD SIZE
 5419 032572  010337  046102                  MOV     R3,T26RSZ            ;RESET RECORD SIZE
 5420 032576  022703  000412                  CMP     #266.,R3             ;END OF RECORD YET
 5421 032602  001271                          BNE     145$                 ;BR, IF MORE RECORDS TO READ
 5422 032604                          190$:   CKLOOP                       ;LOOP IF SELECTED
      032604  104406                                                               TRAP    C$CLP1
 5423 032606                                  ENDSUB                       ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      032606                                                                    L10047:
      032606  104403                                                               TRAP    C$ESUB
 5424 032610  023727  002170  000031          CMP     FATFLG,#25.                  ;IS ERROR COUNT AT 25
 5425 032616  002402                          BLT     999$                         ;BR, IF LESS THAN 25
 5426 032620  004737  020152                  JSR     PC,CKDROP                    ;TRY TO DROP THE UNIT
 5427 032624                          999$:
```

```
                                ;+
                                ;
                                ;TEST 2, SUBTEST 2
                                ;
                                ;VERIFIES THAT THE REREAD PREVIOUS COMMAND WITH OPP=0
                                ;AND SWB=1 OPERATES PROPERLY. THE TEST SEQUENCE IS
                                ;THE SAME AS THAT USED IN SUBTEST 1, BUT IT IS
                                ;VERIFIED THAT DATA STORED BY THE COMMAND CONTAINS
                                ;SWAPPED BYTES.
                                ;
                                ;
                                ;-
032624                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
032624                                                                                      T2.2:
032624  104402                                                                              TRAP    C$BSUB
032626  004737  050640                    JSR     PC,T26REST              ;SET COMMAND PACKET
032632  004737  050732                    JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
032636  004737  050774                    JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET

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

                                ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR

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

032642  004737  016644                    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
032646  103407                          BCS     20$                     ;BR IF INIT WAS OK
032650  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
032654  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
032656                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
032656  104455                                                                              TRAP    C$ERDF
032660  000323                                                                              .WORD   211
032662  003550                                                                              .WORD   SFIERR
032664  011666                                                                              .WORD   SFIMSG
032666                          20$:

032666  012704  045720                    MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

                                ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)

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

032672  004737  010332                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
032676  103407                          BCS     26$                     ;BR, IF COMMAND ISSUED OK
032700  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
032704  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
032706                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
032706  104456                                                                              TRAP    C$ERHRD
032710  000324                                                                              .WORD   212
032712  004754                                                                              .WORD   WRTMSG
032714  011666                                                                              .WORD   SFIMSG
032716                          26$:    CKLOOP                          ;LOOP IF SELECTED
032716  104406                                                                              TRAP    C$CLP1

```

```
                                ;*****************************************************************
                                ;
                                ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                ;
                                ;*****************************************************************

032720  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
032724  103413                      BCS     30$                     ;BR, IF NO PROBLEM
032726  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR
032732  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
032736  010004                      MOV     R0,R4                   ;PACKET ADDRESS SET UP
032740  004737  020100              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
032744                              ERRHRD  EPRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
032744  104456                                                      TRAP    C$ERHRD
032746  000325                                                      .WORD   213
032750  047404                                                      .WORD   T26RWN
032752  011700                                                      .WORD   PKTSSR
032754                          30$:    CKLOOP                      ;LOOP IF SELECTED
032754  104406                                                      TRAP    C$CLP1

                                ;*****************************************************************
                                ;
                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
                                ;
                                ;*****************************************************************

032756  013701  045746                MOV     T26BFR+6,R1             ;PICK UP XST0
032762  010102                      MOV     R1,R2                   ;SET UP EXPECTED
032764  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
032770  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
032772  001406                      BEQ     40$                     ;BR, IF EQUAL (OK)
032774  004737  020100              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
033000                              ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
033000  104456                                                      TRAP    C$ERHRD
033002  000326                                                      .WORD   214
033004  047115                                                      .WORD   T26BOT
033006  016344                                                      .WORD   EXPREC
033010                          40$:    CKLOOP                      ;LOOP IF SELECTED
033010  104406                                                      TRAP    C$CLP1
033012  012703  000400              MOV     #256.,R3                ;RECORD SIZE
033016  013737  003072  046052        MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS

                                ;*****************************************************************
                                ;
                                ;WRITE DATA,ACK,SWB COMMAND
                                ;
                                ;*****************************************************************

033024  012737  110005  046050        MOV     #110005,T26PK3          ;WRITE DATA,ACK,SWB COMMAND
033032  012704  046050                MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
033036                          65$:
033036  010300                      MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
033040  004737  020372              JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
033044  010337  046056              MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
033050  010465  177776              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
033054  004737  017120              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
033060  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
                                        MOV     #SSR,R2                 ;SET UP EXPECTED
                                        CMP     R1,R2                   ;ARE THEY EQUAL
                                        BEQ     75$                     ;BR, IF OK
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                                                        ;SOFT ERROR GENERATED BECAUSE THE
                                                                        ;WRITE COMMAND IS NOT BEING CHECKED
                                                                        ;HERE. IT WAS CHECKED IN CZTUXA
                                        ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
                                                                                TRAP    C$ERSOFT
                                                                                .WORD   215
                                                                                .WORD   WRTERR
                                                                                .WORD   PKTSSR
                                75$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
                                        TST     (R3)+                   ;BUMP RECORD SIZE
                                        CMP     #268.,R3                ;END OF RECORD YET
                                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
                                80$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
                                120$:

                                ;*****************************************************************
                                ;
                                ;ISSUF REWIND COMMAND TO SELECTED TAPE DRIVE
                                ;
                                ;*****************************************************************

                                        JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
                                        BCS     130$                    ;BR, IF NO PROBLEM
                                        MOV     TSSR(R5),R1             ;GET TSSR
                                        MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
                                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                        ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
                                                                                TRAP    C$ERHRD
                                                                                .WORD   216
                                                                                .WORD   T26RWN
                                                                                .WORD   PKTSSR
                                130$:   CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1

                                ;*****************************************************************
                                ;
                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
                                ;
                                ;*****************************************************************

                                        MOV     T26BFR+6,R1             ;PICK UP XST0
                                        MOV     R1,R2                   ;SET UP EXPECTED
                                        BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
                                        CMP     R1,R2                   ;DOES EXP = REC'D
                                        BEQ     140$                    ;BR, IF EQUAL (OK)
                                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                        ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                                                                                TRAP    C$ERHRD
                                                                                .WORD   217
                                                                                .WORD   T26BOT
```

```
                033212  016344                                                          .WORD   EXPREC
5586            033214                          140$:   CKLOOP                          ;LOOP IF SELECTED
                033214  104406                                                          TRAP    C$CLP1
5587            033216  012737  000400  046102          MOV     #256.,T26RSZ            ;SET UP RECORD SIZE
5588
5589                            ;*****************************************************************
5590                            ;
5591                            ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
5592                            ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
5593                            ;
5594                            ;*****************************************************************
5595
5596            033224  012703  000001          145$:   MOV     #1,R3                   ;SPACE ONE RECORD PARAMETER
5597            033230  004737  010140                  JSR     PC,SPACE                ;CALL SPACE ROUTINE
5598            033234  103412                          BCS     150$                    ;BR, IF NO PROBLEM WITH SPACE COMMAND
5599            033236  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
5600            033242  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
5601            033246  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5605            033252                                  ERRHRD  ERRNO,T26SC,EXPREC      ;POSITION (SPACE RECORDS) FAILED
                033252  104456                                                          TRAP    C$ERHRD
                033254  000332                                                          .WORD   218
                033256  046517                                                          .WORD   T26SC
                033260  016344                                                          .WORD   EXPREC
5606            033262                          150$:
5607            033262  013703  046102                  MOV     T26RSZ,R3               ;RECORD SIZE
5608            033266  013737  003072  046052          MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
5609
5610                            ;*****************************************************************
5611                            ;
5612                            ;REREAD DATA,CVC=1,ACK,SWB COMMAND
5613                            ;
5614                            ;*****************************************************************
5615
5616            033274  012737  151001  046050          MOV     #151001,T26PK3          ;REREAD DATA,CVC=1,ACK,SWB COMMAND
5617            033302  012704  046050          165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5618            033306  010337  046056                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
5619            033312  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5620            033316  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5621            033322  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5622            033326  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
5623            033332  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5624            033334  001406                          BEQ     170$                    ;BR, IF OK
5625            033336  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5629            033342                                  ERRHRD  ERRNO,T26WDC,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
                033342  104456                                                          TRAP    C$ERHRD
                033344  000333                                                          .WORD   219
                033346  047740                                                          .WORD   T26WDC
                033350  011700                                                          .WORD   PKTSSR
5630            033352                          170$.   CKLOOP                          ;LOOP IF SELECTED
                033352  104406                                                          TRAP    C$CLP1
5631            033354  013702  003072                  MOV     FREE,R2                 ;CURRENT BUFFER ADDRESS TO R2
5632            033360  010304                          MOV     R3,R4                   ;CURRENT RECORD SIZE
5633            033362  162704  000400                  SUB     #256.,R4                ;FIRST LOCATION IN BUFFER
5634            033366  060204          173$:   ADD     R2,R4                   ;SET UP POINTER
5635            033370  021403                          CMP     (R4),R3                 ;CHECK DATA READ (R3=DATA ALSO)
5636            033372  001410                          BEQ     180$                    ;BR, IF ALL IS WELL
5637            033374  011401                          MOV     (R4),R1                 ;RECD DATA
```

```
5638 033376  010302                        MOV     R3,R2                   ;EXPECTED DATA
5639 033400  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5643 033404                                ERRHRD  ERRNO,T26DTA,EXPREC     ;DATA READ NOT = WRITTEN
     033404  104456                                                                TRAP    C$ERHRD
     033406  000334                                                                .WORD   220
     033410  047162                                                                .WORD   T26DTA
     033412  016344                                                                .WORD   EXPREC
5644 033414                        180$:   CKLOOP                          ;LOOP IF SELECTED
     033414  104406                                                                TRAP    C$CLP1
5645 033416  005724                        TST     (R4)+                   ;BUMP TO NEXT LOCATION
5646 033420  160204                        SUB     R2,R4                   ;CORRECT RECORDS SIZE VALUE
5647 033422  020403                        CMP     R4,R3                   ;END OF RECORD YET
5648 033424  001360                        BNE     173$                    ;BR, IF NOT AT END OF RECORD
5649 033426  005723                        TST     (R3)+                   ;BUMP RECORD SIZE
5650 033430  010337  046102                MOV     R3,T26RSZ               ;STORE RECORD SIZE
5651 033434  022703  000412                CMP     #266.,R3                ;END OF RECORD YET
5652 033440  001271                        BNE     145$                    ;BR, IF MORE RECORDS TO READ
5653 033442                        190$:   CKLOOP                          ;LOOP IF SELECTED
     033442  104406                                                                TRAP    C$CLP1
5654 033444                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     033444                                                                     L10050:
     033444  104403                                                                TRAP    C$ESUB
5655 033446  023727  002170  000031                CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
5656 033454  002402                                BLT     999$                    ;BR, IF LESS THAN 25
5657 033456  004737  020152                        JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
5658 033462                        999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 3
                                        ;
                                        ;VERIFIES THAT THE REREAD PREVIOUS COMMAND WITH OPP=1
                                        ;(READ REVERSE, SPACE FORWARD) AND SWB=0 OPERATES
                                        ;PROPERLY. THE TAPE IS FIRST REWOUND AND THEN WRITTEN
                                        ;WITH A SERIES OF TEST RECORDS VARYING IN LENGTH AND
                                        ;DATA CONTENT; THE FIRST FOUR BYTES OF EACH RECORD
                                        ;CONTAIN ITS RECORD NUMBER (INDICATING POSITION ON
                                        ;TAPE). THE TAPE IS THEN REWOUND AGAIN. FOR EACH
                                        ;TEST RECORD, THE FOLLOWING SEQUENCE IS EXECUTED.
                                        ;
                                        ;1.     THE REREAD PREVIOUS COMMAND WITH OPP=1 IS ISSUED
                                        ;       AND THE RESULTS CHECKED
                                        ;
                                        ;2.     A READ FORWARD COMMAND IS THEN ISSUED AND THE
                                        ;       DATA IS CHECKED TO VERIFY THAT THE TAPE WAS
                                        ;       POSITIONED PROPERLY AFTER THE REREAD PREVIOUS
                                        ;       COMMAND (E.G. THE TAPE SHOULD HAVE BEEN LEFT
                                        ;       POSITIONED AT THE START OF THE TEST RECORD). THE
                                        ;       READ FORWARD COMMAND LEAVES THE TAPE POSITIONED
                                        ;       PROPERLY AT THE START OF THE NEXT TEST RECORD.
                                        ;
                                        ;THE BYTE COUNT ON EACH REREAD PREVIOUS COMMAND IS SET
                                        ;TO THE LENGTH OF THE EXPECTED RECORD, SO NO
                                        ;EXCEPTIONAL CONDITIONS SHOULD OCCUR.
                                        ;
                                        ;
                                        ;
                                        ;-
                                        ;
033462                                  BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
033462                                                                          T2.3:
033462  104402                                                                  TRAP    C$BSUB
033464  004737  050640                  JSR     PC,T26REST      ;SET COMMAND PACKET
033470  005037  046076                  CLR     T26CNT          ;CLEAR TAPE RECORD COUNTER
033474  004737  050732                  JSR     PC,T26RT2       ;SET UP OTHER COMMAND PACKET
033500  004737  050774                  JSR     PC,T26RT3       ;SET UP OTHER COMMAND PACKET
                                        ;
                                        ;*********************************************************************
                                        ;
                                        ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                        ;
                                        ;*********************************************************************
                                        ;
033504  004737  016644                  JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
033510  103407                          BCS     20$             ;BR IF INIT WAS OK
033512  004737  020100                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
033516  010001                          MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
033520                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
033520  104455                                                                  TRAP    C$ERDF
033522  000335                                                                  .WORD   221
033524  003550                                                                  .WORD   SFIERR
033526  011666                                                                  .WORD   SFIMSG
033530                                  20$:
```

```
5714
5715 033530  012704  045720                MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5716
5717                                ;*********************************************************************
5718                                ;
5719                                ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
5720                                ;
5721                                ;*********************************************************************
5722
5723 033534  004737  010332                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5724 033540  103407                        BCS     26$                     ;BR, IF COMMAND ISSUED OK
5725 033542  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5729 033546  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5730 033550                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     033550  104456                                                                TRAP    C$ERHRD
     033552  000335                                                                .WORD   222
     033554  004754                                                                .WORD   WRTMSG
     033556  011666                                                                .WORD   SFIMSG
5731 033560                        26$:    CKLOOP                          ;LOOP IF SELECTED
     033560  104406                                                                TRAP    C$CLP1
5732
5733                                ;*********************************************************************
5734                                ;
5735                                ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
5736                                ;
5737                                ;*********************************************************************
5738
5739 033562  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5740 033566  103413                        BCS     30$                     ;BR, IF NO PROBLEM
5741 033570  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
5742 033574  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
5743 033600  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
5744 033602  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5748 033606                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;RFWIND NOT ACCEPTED
     033606  104456                                                                TRAP    C$ERHRD
     033610  000337                                                                .WORD   223
     033612  047404                                                                .WORD   T26RWN
     033614  011700                                                                .WORD   PKTSSR
5749 033616                        30$:    CKLOOP                          ;LOOP IF SELECTED
     033616  104406                                                                TRAP    C$CLP1
5750
5751                                ;*********************************************************************
5752                                ;
5753                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
5754                                ;
5755                                ;*********************************************************************
5756
5757 033620  013701  045746                MOV     T26BFP+6,R1             ;PICK UP XST0
5758 033624  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5759 033626  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5760 033632  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5761 033634  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
5762 033636  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5766 033642                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     033642  104456                                                                TRAP    C$ERHRD
     033644  000340                                                                .WORD   224
     033646  047115                                                                .WORD   T26BOT
```

```
                033650  016344                                                          .WORD   EXPREC
5767            033652                          40$:    CKLOOP                          ;LOOP IF SELECTED
                033652  104406                                                          TRAP    C$CLP1
5768            033654  012703  000400                  MOV     #256.,R3                ;RECORD SIZE
5769            033660  013737  003072  046052          MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
5770
5771                                    ;*****************************************************************
5772                                    ;
5773                                    ;WRITE DATA,CVC=1,ACK COMMAND
5774                                    ;
5775                                    ;*****************************************************************
5776
5777            033666  012737  140005  046050          MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
5778            033674  012704  046050                  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5779            033700                          65$:
5780            033700  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
5781            033702  004737  020372                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
5782            033706  010337  046056                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
5783            033712  013777  046076  147152          MOV     T26CNT,@FREE            ;MOVE TAPE RECORD NUMBER TO BUFFER
5784            033720  062737  000001  046076          ADD     #1,T26CNT               ;NUMBER READY FOR NEXT RECORD
5785            033726  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5786            033732  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5787            033736  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5788            033742  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
5789            033746  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5790            033750  001406                          BEQ     75$                     ;BR, IF OK
5791            033752  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5795                                                                                    ;SOFT ERROR GENERATED BECAUSE THE
5796                                                                                    ;WRITE COMMAND IS NOT BEING CHECKED
5797                                                                                    ;HERE. IT WAS CHECKED IN CZTUXA
5798            033756                          ERRSOFT ERRNO,WRTERR,PKTSSR             ;TSSR INCORRECT AFTER WRITE DATA
                033756  104457                                                          TRAP    C$ERSOFT
                033760  000341                                                          .WORD   225
                033762  005011                                                          .WORD   WRTERR
                033764  011700                                                          .WORD   PKTSSR
5799            033766                          75$:    CKLOOP                          ;LOOP IF SELECTED
                033766  104406                                                          TRAP    C$CLP1
5800            033770  005723                          TST     (R3)+                   ;BUMP THE RECORD SIZE
5801            033772  022703  000414                  CMP     #268.,R3                ;MAXIMUM SIZE YET
5802            033776  001401                          BEQ     120$                    ;BR, IF AT END OF WRITE SEQUENCE
5803            034000  000737                          BR      65$                     ;WRITE MORE RECORDS
5804            034002                          120$:
5805            034002  005037  046076                  CLR     T26CNT                  ;SET RECORD COUNTER BACK TO ZERO
5806
5807                                    ;*****************************************************************
5808                                    ;
5809                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
5810                                    ;
5811                                    ;*****************************************************************
5812
5813            034006  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5814            034012  103413                          BCS     130$                    ;BR, IF NO PROBLEM
5815            034014  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
5816            034020  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
5817            034024  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
5818            034026  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5822            034032                                  ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
```

```
        034032  104456                                                          TRAP    C$ERHRD
        034034  000342                                                          .WORD   226
        034036  047404                                                          .WORD   T26RWN
        034040  011700                                                          .WORD   PKTSSR
 5823   034042                          130$:   CKLOOP                          ;LOOP IF SELECTED
        034042  104406                                                          TRAP    C$CLP1
 5824
 5825                                   ;*************************************************************************
 5826                                   ;
 5827                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 5828                                   ;
 5829                                   ;*************************************************************************
 5830
 5831   034044  013701  045746                  MOV     T26BFR+6,R1             ;PICK UP XST0
 5832   034050  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 5833   034052  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 5834   034056  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 5835   034060  001406                          BEQ     140$                    ;BR, IF EQUAL (OK)
 5836   034062  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5840   034066                                  ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        034066  104456                                                          TRAP    C$ERHRD
        034070  000343                                                          .WORD   227
        034072  047115                                                          .WORD   T26BOT
        034074  016344                                                          .WORD   EXPREC
 5841   034076                          140$:   CKLOOP                          ;LOOP IF SELECTED
        034076  104406                                                          TRAP    C$CLP1
 5842
 5843                                   ;*************************************************************************
 5844                                   ;
 5845                                   ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 5846                                   ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 5847                                   ;
 5848                                   ;*************************************************************************
 5849
 5850   034100  012703  000001                  MOV     #1,R3                   ;SPACE 1 RECORD FORWARD
 5851   034104  004737  010140                  JSR     PC,SPACE                ;SPACE CALL
 5852   034110  012703  000400                  MOV     #256.,R3                ;RECORD SIZE
 5853   034114  013737  003072  046052  150$:   MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
 5854
 5855                                   ;*************************************************************************
 5856                                   ;
 5857                                   ;REREAD DATA,CVC=1,ACK, OPP COMMAND
 5858                                   ;
 5859                                   ;*************************************************************************
 5860
 5861   034122  012737  161001  046050          MOV     #161001,T26PK3          ;REREAD DATA,CVC=1,ACK, OPP COMMAND
 5862   034130  012704  046050  165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 5863   034134  010337  046056                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 5864   034140  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5865   034144  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5866   034150  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5867   034154  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 5868   034160  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 5869   034162  001406                          BEQ     170$                    ;BR, IF OK
 5870   034164  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5874   034170                                  ERRHRD  ERRNO,T26RRG,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
        034170  104456                                                          TRAP    C$ERHRD
```

```
                034172  000344                                                          .WORD   228
                034174  046422                                                          .WORD   T26RRG
                034176  011700                                                          .WORD   PKTSSR
 5875           034200                          170$:   CKLOOP                          ;LOOP IF SELECTED
                034200  104406                                                          TRAP    C$CLP1
 5876           034202  005723                          TST     (R3)+                   ;BUMP RECORD SIZE
 5877           034204  062737  000001  046076          ADD     #1,T26CNT               ;BUMP TAPE RECORD COUNTER
 5878                                                  ;*************************************************************
 5879                                                  ;
 5880                                                  ;READ DATA, CVC=1, ACK COMMAND
 5881                                                  ;
 5882                                                  ;*************************************************************
 5883           034212  012737  140001  046050          MOV     #140001,T26PK3          ;READ DATA, CVC=1, ACK COMMAND
 5884           034220  010337  046056                  MOV     R3,T26SZ                ;SET SIZE INTO PACKET
 5885           034224  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE READ DATA COMMAND
 5886           034230  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR
 5887           034234  016501  00000C                  MOV     TSSR(R5),R1             ;PICK UP THE TSSR
 5888           034240  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 5889           034244  020102                          CMP     R1,R2                   ;IS THE TSSR OK
 5890           034246  001406                          BEQ     195$                    ;BR, IF TSSR OK (GOOD)
 5891           034250  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5895           034254                                  ERRHRD  ERRNO,RDERR,PKTSSR      ;READ DATA COMMAND FAILED
                034254  104456                                                          TRAP    C$ERHRD
                034256  000345                                                          .WORD   229
                034260  005104                                                          .WORD   RDERR
                034262  011700                                                          .WORD   PKTSSR
 5896           034264                          195$:   CKLOOP                          ;LOOP IF SELECTED
                034264  104406                                                          TRAP    C$CLP1
 5897           034266  017701  146600                  MOV     @FREE,R1                ;FIRST WORD FROM READ BUFFER
 5898           034272  013702  046076                  MOV     T26CNT,R2               ;SET UP EXPECTED
 5899           034276  020102                          CMP     R1,R2                   ;IS TAPE POSITION CORRECT
 5900           034300  001406                          BEQ     197$                    ;KEEP GOING POSITION OK
 5901           034302  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5905           034306                                  ERRHRD  ERRNO,T26WNG,EXPREC     ;TAPE POSITION INCORRECT
                034306  104456                                                          TRAP    C$ERHRD
                034310  000346                                                          .WORD   230
                034312  046106                                                          .WORD   T26WNG
                034314  016344                                                          .WORD   EXPREC
 5906           034316                          197$:   CKLOOP
                034316  104406                                                          TRAP    C$CLP1
 5907           034320  022705  000412                  CMP     #266.,R3                ;AT MAX SIZE YET
 5908           034324  001401                          BEQ     200$                    ;BR, IF AT END OF THE SUBTEST
 5909           034326  000672                          BR      150$                    ;KEEP GOING MORE RECORDS
 5910           034330                          200$:   ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
                034330                                                                          L10051:
                034330  104403                                                          TRAP    C$ESUB
 5911           034332  023727  002170  000031          CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
 5912           034340  002402                          BLT     999$                            ;BR, IF LESS THAN 25
 5913           034342  004737  020152                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 5914           034346                          999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 4
                                        ;
                                        ;VERIFIES THAT THE REREAD PREVIOUS COMMAND WITH OPP=1
                                        ;AND SWB=1 OPERATES PROPERLY. THE TEST SEQUENCE IS
                                        ;THE SAME THAT IS USED IN SUBTEST 3, BUT IT IS
                                        ;VERIFIED THAT DATA STORED BY THE COMMAND CONTAINS
                                        ;SWAPPED BYTES.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
034346                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
034346                                                                                          T2.4:
034346  104402                                                                                  TRAP    C$BSUB
034350  004737  050640                        JSR     PC,T26REST              ;SET COMMAND PACKET
034354  005037  046076                        CLR     T26CNT                  ;CLEAR TAPE RECORD COUNTER
034360  004737  050732                        JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
034364  004737  050774                        JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
                                        ;
                                        ;*************************************************************************
                                        ;
                                        ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                        ;
                                        ;*************************************************************************
                                        ;
034370  004737  016644                        JSR     PC,SOFTINIT             ;DO INITIALIZE ON CONTROLLER
034374  103407                                BCS     20$                     ;BR IF INIT WAS OK
034376  004737  020100                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
034402  010001                                MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
034404                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
034404  104455                                                                  TRAP    C$ERDF
034406  000347                                                                  .WORD   231
034410  003550                                                                  .WORD   SFIERR
034412  011666                                                                  .WORD   SFIMSG
034414                                  20$:
                                        ;
034414  012704  045720                        MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                        ;
                                        ;*************************************************************************
                                        ;
                                        ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                        ;
                                        ;*************************************************************************
                                        ;
034420  004737  010332                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
034424  103407                                BCS     26$                     ;BR, IF COMMAND ISSUED OK
034426  004737  020100                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
034432  010001                                MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
034434                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
034434  104456                                                                  TRAP    C$ERHRD
034436  000350                                                                  .WORD   232
034440  004754                                                                  .WORD   WRTMSG
034442  011666                                                                  .WORD   SFIMSG
```

```
5969 034444                        26$:    CKLOOP                          ;LOOP IF SELECTED
     034444  104406                                                                TRAP    C$CLP1
5970
5971                               ;*****************************************************************
5972                               ;
5973                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
5974                               ;
5975                               ;*****************************************************************
5976
5977 034446  004737  010434                 JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5978 034452  103413                        BCS     30$                     ;BR, IF NO PROBLEM
5979 034454  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
5980 034460  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
5981 034464  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
5982 034466  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5986 034472                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     034472  104456                                                                TRAP    C$ERHRD
     034474  000351                                                                .WORD   233
     034476  047404                                                                .WORD   T26RWN
     034500  011700                                                                .WORD   PKTSSR
5987 034502                        30$:    CKLOOP                          ;LOOP IF SELECTED
     034502  104406                                                                TRAP    C$CLP1
5988
5989                               ;*****************************************************************
5990                               ;
5991                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
5992                               ;
5993                               ;*****************************************************************
5994
5995 034504  013701  045746                 MOV     T26BFR+6,R1             ;PICK UP XST0
5996 034510  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5997 034512  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5998 034516  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5999 034520  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
6000 034522  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6004 034526                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034526  104456                                                                TRAP    C$ERHRD
     034530  000352                                                                .WORD   234
     034532  047115                                                                .WORD   T26BOT
     034534  016344                                                                .WORD   EXPREC
6005 034536                        40$:    CKLOOP                          ;LOOP IF SELECTED
     034536  104406                                                                TRAP    C$CLP1
6006 034540  012703  000400                MOV     #256.,R3                ;RECORD SIZE
6007 034544  013737  003072  046052        MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
6008
6009                               ;*****************************************************************
6010                               ;
6011                               ;WRITE DATA,CVC=1,ACK COMMAND
6012                               ;
6013                               ;*****************************************************************
6014
6015 034552  012737  140005  046050        MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
6016 034560  012704  046050                MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6017 034564                        65$:
6018 034564  010300                        MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
6019 034566  004737  020372                JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
6020 034572  010337  046056                MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
```

```
6021 034576  013777  046076  146266          MOV     T26CNT,@FREE            ;MOVE TAPE RECORD NUMBER TO BUFFER
6022 034604  062737  000001  046076          ADD     #1,T26CNT               ;NUMBER READY FOR NEXT RECORD
6023 034612  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6024 034616  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6025 034622  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6026 034626  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
6027 034632  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
6028 034634  001406                          BEQ     75$                     ;BR, IF OK
6029 034636  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6033                                                                         ;SOFT ERROR GENERATED BECAUSE THE
6034                                                                         ;WRITE COMMAND IS NOT BEING CHECKED
6035                                                                         ;HERE. IT WAS CHECKED IN CZTUXA
6036 034642                                  ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
     034642  104457                                                                  TRAP    C$ERSOFT
     034644  000353                                                                  .WORD   235
     034646  005011                                                                  .WORD   WRTERR
     034650  011700                                                                  .WORD   PKTSSR
6037 034652                          75$:    CKLOOP                          ;LOOP IF SELECTED
     034652  104406                                                                  TRAP    C$CLP1
6038 034654  005723                          TST     (R3)+                   ;BUMP THE RECORD SIZE
6039 034656  022703  000412                  CMP     #266.,R3                ;MAXIMUM SIZE YET
6040 034662  001401                          BEQ     120$                    ;BR, IF AT END OF WRITE SEQUENCE
6041 034664  000737                          BR      65$                     ;WRITE MORE RECORDS
6042 034666                          120$:
6043 034666  005037  046076                  CLR     T26CNT                  ;SET RECORD COUNTER BACK TO ZERO
6044
6045                                 ;*****************************************************************
6046                                 ;
6047                                 ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
6048                                 ;
6049                                 ;*****************************************************************
6050
6051 034672  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6052 034676  103413                          BCS     130$                    ;BR, IF NO PROBLEM
6053 034700  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
6054 034704  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
6055 034710  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
6056 034712  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6060 034716                                  ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     034716  104456                                                                  TRAP    C$ERHRD
     034720  000354                                                                  .WORD   236
     034722  047404                                                                  .WORD   T26RWN
     034724  011700                                                                  .WORD   PKTSSR
6061 034726                          130$:   CKLOOP                          ;LOOP IF SELECTED
     034726  104406                                                                  TRAP    C$CLP1
6062
6063                                 ;*****************************************************************
6064                                 ;
6065                                 ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
6066                                 ;
6067                                 ;*****************************************************************
6068
6069 034730  013701  045746                  MOV     T26BFR+6,R1             ;PICK UP XST0
6070 034734  010102                          MOV     R1,R2                   ;SET UP EXPECTED
6071 034736  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6072 034742  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
6073 034744  001406                          BEQ     140$                    ;BR, IF EQUAL (OK)
```

```
6074 034746  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6078 034752                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034752  104456                                                        TRAP    C$ERHRD
     034754  000355                                                        .WORD   237
     034756  047115                                                        .WORD   T26BOT
     034760  016344                                                        .WORD   EXPREC
6079 034762                        140$:   CKLOOP                          ;LOOP IF SELECTED
     034762  104406                                                        TRAP    C$CLP1
6080
6081                               ;*****************************************************************
6082                               ;
6083                               ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
6084                               ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
6085                               ;
6086                               ;*****************************************************************
6087
6088 034764  012703  000001                MOV     #1,R3                   ;SET UP SPACE FORWARD 1
6089 034770  004737  010140                JSR     PC,SPACE                ;ISSUE SPACE COMMAND
6090 034774  012703  000400                MOV     #256.,R3                ;RECORD SIZE
6091 035000  013737  003072  046052  150$:  MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
6092
6093                               ;*****************************************************************
6094                               ;
6095                               ;REREAD DATA,CVC=1,ACK, OPP COMMAND
6096                               ;
6097                               ;*****************************************************************
6098
6099 035006  012737  171001  046050          MOV     #171001,T26PK3          ;REREAD DATA,CVC=1,ACK, OPP COMMAND
6100 035014  012704  046050        165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6101 035020  010337  046056                MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
6102 035024  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6103 035030  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6104 035034  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6105 035040  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
6106 035044  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6107 035046  001406                        BEQ     170$                    ;BR, IF OK
6108 035050  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6112 035054                                ERRHRD  ERRNO,T26RRF,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
     035054  104456                                                        TRAP    C$ERHRD
     035056  000356                                                        .WORD   238
     035060  046325                                                        .WORD   T26RRF
     035062  011700                                                        .WORD   PKTSSR
6113 035064                        170$:   CKLOOP                          ;LOOP IF SELECTED
     035064  104406                                                        TRAP    C$CLP1
6114 035066  017701  146000                MOV     @FREE,R1                ;FIRST WORD FROM READ BUFFER
6115 035072  013702  046076                MOV     T26CNT,R2               ;SET UP EXPECTED
6116 035076  000302                        SWAB    R2                      ;SWAP BYTES IN EXPECTED
6117 035100  020102                        CMP     R1,R2                   ;IS TAPE POSITION CORRECT
6118 035102  001406                        BEQ     190$                    ;KEEP GOING POSITION OK
6119 035104  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6123 035110                                ERRHRD  ERRNO,T26WNG,EXPREC     ;TAPE POSITION INCORRECT
     035110  104456                                                        TRAP    C$ERHRD
     035112  000357                                                        .WORD   239
     035114  046106                                                        .WORD   T26WNG
     035116  016344                                                        .WORD   EXPREC
6124 035120                        190$:   CKLOOP
     035120  104406                                                        TRAP    C$CLP1
```

```
 6125 035122  005723                        TST     (R3)+                   ;NEXT RECORD SIZE
 6126 035124  062737  000001  046076        ADD     #1,T26CNT               ;BUMP TAPE RECORD COUNTER
 6127
 6128                                ;*****************************************************************
 6129                                ;
 6130                                ;READ DATA, CVC=1, ACK COMMAND
 6131                                ;
 6132                                ;*****************************************************************
 6133
 6134 035132  012737  140001  046050        MOV     #140001,T26PK3          ;READ DATA, CVC=1, ACK COMMAND
 6135 035140  010337  046056                MOV     R3,T26SZ                ;SET SIZE INTO PACKET
 6136 035144  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE READ DATA COMMAND
 6137 035150  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR
 6138 035154  016501  000000                MOV     TSSR(R5),R1             ;PICK UP THE TSSR
 6139 035160  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 6140 035164  020102                        CMP     R1,R2                   ;IS THE TSSR OK
 6141 035166  001406                        BEQ     215$                    ;BR, IF TSSR OK (GOOD)
 6142 035170  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6146 035174                                ERRHRD  ERRNO,T26RDF,PKTSSR     ;READ DATA COMMAND FAILED
      035174  104456                                                                    TRAP    C$ERHRD
      035176  000360                                                                    .WORD   240
      035200  046256                                                                    .WORD   T26RDF
      035202  011700                                                                    .WORD   PKTSSR
 6147 035204                        215$:   CKLOOP                          ;LOOP IF SELECTED
      035204  104406                                                                    TRAP    C$CLP1
 6148 035206  017701  145660                MOV     @FREE,R1                ;FIRST WORD FROM READ BUFFER
 6149 035212  013702  046076                MOV     T26CNT,R2               ;SET UP EXPECTED
 6150 035216  020102                        CMP     R1,R2                   ;IS TAPE POSITION CORRECT
 6151 035220  001406                        BEQ     217$                    ;KEEP GOING POSITION OK
 6152 035222  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6156 035226                                ERRHRD  ERRNO,T26WNG,EXPREC     ;TAPE POSITION INCORRECT
      035226  104456                                                                    TRAP    C$ERHRD
      035230  000361                                                                    .WORD   241
      035232  046106                                                                    .WORD   T26WNG
      035234  016344                                                                    .WORD   EXPREC
 6157 035236                        217$:   CKLOOP
      035236  104406                                                                    TRAP    C$CLP1
 6158 035240  022703  000410                CMP     #264.,R3                ;AT MAX SIZE YET
 6159 035244  001401                        BEQ     220$                    ;BR, IF AT END OF THE SUBTEST
 6160 035246  000654                        BR      150$                    ;KEEP GOING MORE RECORDS
 6161 035250                        220$:
 6162 035250                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      035250                                                                        L10052:
      035250  104403                                                                    TRAP    C$ESUB
 6163 035252  023727  002170  000031        CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
 6164 035260  002402                        BLT     999$                            ;BR, IF LESS THAN 25
 6165 035262  004737  020152                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 6166 035266                        999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 5
                                        ;
                                        ;VERIFIES THAT A REREAD PREVIOUS COMMAND READING A
                                        ;RECORD LONGER THAN THE SPECIFIED BYTE COUNT CAUSES
                                        ;TAPE STATUS ALERT TERMINATION WITH THE RECORD LENGTH
                                        ;LONG (RLL) BIT SET  RESULTS ARE .ERIFIED FOR BOTH
                                        ;STATES OF OPP (0 AND 1).
                                        ;
                                        ;
                                        ;
                                        ;-


035266                                          BGNSUB                                  ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
035266                                                                                          T2.5:
035266  104402                                                                                          TRAP    C$BSUB
035270  004737  050640                          JSR     PC,T26REST                      ;SET COMMAND PACKET
035274  004737  050732                          JSR     PC,T26RT2                       ;SET UP OTHER COMMAND PACKET
035300  004737  050774                          JSR     PC,T26RT3                       ;SET UP OTHER COMMAND PACKET

                                        ;*****************************************************************
                                        ;
                                        ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                        ;
                                        ;*****************************************************************

035304  004737  016644                          JSR     PC,SOFINIT                      ;DO INITIALIZE ON CONTROLLER
035310  103407                                  BCS     20$                             ;BR IF INIT WAS OK
035312  004737  020100                          JSR     PC,FATCHK                       ;INC AND CHECK FOR MORE THAN 25 ERRORS
035316  010001                                  MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
035320                                          ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
035320  104455                                                                                          TRAP    C$ERDF
035322  000362                                                                                          .WORD   242
035324  003550                                                                                          .WORD   SFIERR
035326  011666                                                                                          .WORD   SFIMSG
035330                                  20$:

035330  012704  045720                          MOV     #T26PACKET,R4                   ;SUBROUTINE NEEDS PACKET ADDRESS

                                        ;*****************************************************************
                                        ;
                                        ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                        ;
                                        ;*****************************************************************

035334  004737  010332                          JSR     PC,WRTCHR                       ;ISSUE WRITE CHARACTERISTICS
035340  103407                                  BCS     26$                             ;BR, IF COMMAND ISSUED OK
035342  004737  020100                          JSR     PC,FATCHK                       ;INC AND CHECK FOR MORE THAN 25 ERRORS
035346  010001                                  MOV     R0,R1                           ;SAVE CONTENTS OF TSSR
035350                                          ERRHRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
035350  104456                                                                                          TRAP    C$ERHRD
035352  000363                                                                                          .WORD   243
035354  004754                                                                                          .WORD   WRTMSG
035356  011666                                                                                          .WORD   SFIMSG
035360                                  26$:    CKLOOP                                  ;LOOP IF SELECTED
```

```
     035360  104406                                                                        TRAP    C$CLP1

                                   ;*****************************************************************
                                   ;
                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                   ;
                                   ;*****************************************************************

     035362  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
     035366  103413                        BCS     30$                     ;BR, IF NO PROBLEM
     035370  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
     035374  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
     035400  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
     035402  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     035406                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     035406  104456                                                                        TRAP    C$ERHRD
     035410  000364                                                                        .WORD   244
     035412  047404                                                                        .WORD   T26RWN
     035414  011700                                                                        .WORD   PKTSSR
     035416                        30$:    CKLOOP                          ;LOOP IF SELECTED
     035416  104406                                                                        TRAP    C$CLP1

                                   ;*****************************************************************
                                   ;
                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
                                   ;
                                   ;*****************************************************************

     035420  013701  045746                MOV     T26BFR+6,R1             ;PICK UP XST0
     035424  010102                        MOV     R1,R2                   ;SET UP EXPECTED
     035426  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
     035432  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
     035434  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
     035436  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     035442                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035442  104456                                                                        TRAP    C$ERHRD
     035444  000365                                                                        .WORD   245
     035446  047115                                                                        .WORD   T26BOT
     035450  016344                                                                        .WORD   EXPREC
     035452                        40$:    CKLOOP                          ;LOOP IF SELECTED
     035452  104406                                                                        TRAP    C$CLP1
     035454  012703  001000                MOV     #512.,R3                ;RECORD SIZE
     035460  013737  003072  046052        MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS

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

     035466  012737  140005  046050        MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
     035474  012704  046050                MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
     035500                        65$:
     035500  010337  046036                MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
     035504  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
     035510  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
     035514  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
 6273 035520  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 6274 035524  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6275 035526  001406                        BEQ     75$                     ;BR, IF OK
 6276 035530  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6280                                                                       ;SOFT ERROR GENERATED BECAUSE THE
 6281                                                                       ;WRITE COMMAND IS NOT BEING CHECKED
 6282                                                                       ;HERE. IT WAS CHECKED IN CZTUXA
 6283 035534                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      035534  104457                                                                TRAP    C$ERSOFT
      035536  000366                                                                .WORD   246
      035540  005011                                                                .WORD   WRTERR
      035542  011700                                                                .WORD   PKTSSR
 6284 035544                        75$:    CKLOOP                          ;LOOP IF SELECTED
      035544  104406                                                                TRAP    C$CLP1
 6285 035546  005303                        DEC     R3                      ;SET RECORD SIZE TO 511.
 6286 035550  013737  003072  046052        MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
 6287
 6288                                ;*************************************************************************
 6289                                ;
 6290                                ;REREAD DATA,CVC=1,ACK,OPP=1 COMMAND
 6291                                ;
 6292                                ;*************************************************************************
 6293
 6294 035556  012737  161001  046050        MOV     #161001,T26PK3          ;REREAD DATA,CVC=1,ACK,OPP=1 COMMAND
 6295 035564  012704  046050        165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6296 035570  010337  046056                MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 6297 035574  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6298 035600  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6299 035604  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6300 035610  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
 6301 035614  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6302 035616  001406                        BEQ     170$                    ;BR, IF OK
 6303 035620  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6307 035624                                ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
      035624  104456                                                                TRAP    C$ERHRD
      035626  000367                                                                .WORD   247
      035630  050462                                                                .WORD   T26TRL
      035632  011700                                                                .WORD   PKTSSR
 6308 035634                        170$:   CKLOOP                          ;LOOP IF SELECTED
      035634  104406                                                                TRAP    C$CLP1
 6309
 6310                                ;*************************************************************************
 6311                                ;
 6312                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 6313                                ;
 6314                                ;*************************************************************************
 6315
 6316 035636  013701  045746                MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
 6317 035642  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 6318 035644  052702  010000                BIS     #BIT12,R2               ;SET THE RLL BIT IN EXPECTED
 6319 035650  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6320 035652  001406                        BEQ     180$                    ;BR, IF EQUAL (ALL IS WELL)
 6321 035654  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6325 035660                                ERRHRD  ERRNO,T26LON,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
      035660  104456                                                                TRAP    C$ERHRD
      035662  000370                                                                .WORD   248
      035664  050230                                                                .WORD   T26LON
```

```
035666  016344                                                                  .WORD   EXPREC
035670                                  180$:   CKLOOP                          ;LOOP IF SELECTED
035670  104406                                                                  TRAP    C$CLP1
035672  012703  000777                          MOV     #511.,R3                ;SET RECORD SIZE
035676  013737  003072  046052                  MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS

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

035704  012737  141001  046050                  MOV     #141001,T26PK3          ;REREAD DATA,CVC=1,ACK COMMAND
035712  012704  046050          365$:           MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
035716  010337  046056                          MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
035722  010465  177776                          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
035726  004737  017120                          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
035732  016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
035736  012702  100204                          MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
035742  020102                                  CMP     R1,R2                   ;ARE THEY EQUAL
035744  001406                                  BEQ     370$                    ;BR, IF OK
035746  004737  020100                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
035752                                          ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
035752  104456                                                                  TRAP    C$ERHRD
035754  000371                                                                  .WORD   249
035756  050462                                                                  .WORD   T26TRL
035760  011700                                                                  .WORD   PKTSSR
035762                                  370$:   CKLOOP                          ;LOOP IF SELECTED
035762  104406                                                                  TRAP    C$CLP1
                                        ;*******************************************************************
                                        ;
                                        ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
                                        ;
                                        ;*******************************************************************
035764  013701  045746                          MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
035770  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
035772  052702  010000                          BIS     #BIT12,R2               ;SET THE RLL BIT IN EXPECTED
035776  020102                                  CMP     R1,R2                   ;ARE THEY EQUAL
036000  001406                                  BEQ     380$                    ;BR, IF EQUAL (ALL IS WELL)
036002  004737  020100                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
036006                                          ERRHRD  ERRNO,T26LON,EXPREC     ;THE RLL BIT WAS NOT SET IN XSTO
036006  104456                                                                  TRAP    C$ERHRD
036010  000372                                                                  .WORD   250
036012  050230                                                                  .WORD   T26LON
036014  016344                                                                  .WORD   EXPREC
036016                                  380$:   ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>
036016                                                                  L10053:
036016  104403                                                                  TRAP    C$ESUB
036020  023727  002170  000031                  CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
036026  002402                                  BLT     999$                            ;BR, IF LESS THAN 25
036030  004737  020152                          JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
036034                                  999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 6
                                        ;
                                        ;VERIFIES THAT A REREAD PREVIOUS COMMAND READING A
                                        ;RECORD SHORTER THAN THE SPECIFIED BYTE COUNT CAUSES
                                        ;TAPE STATUS ALERT TERMINATION WITH THE RECORD LENGTH
                                        ;SHORT (RLS) BIT SET. IT IS VERIFIED THAT THE
                                        ;RESIDUAL BYTE COUNTER (RBPCR) IN THE MESSAGE BUFFER
                                        ;CONTAINS THE PROPER NONZERO VALUE (E.G., THE
                                        ;DIFFERENCE BETWEEN THE ORIGINAL BYTE COUNT AND THE
                                        ;ACTUAL RECORD LENGTH). RESULTS ARE VERIFIED FOR BOTH
                                        ;STATES OF OPP (0 AND 1).
                                        ;
                                        ;
                                        ;-
036034                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
036034                                                                                  T2.6:
036034  104402                                                                          TRAP    C$BSUB
036036  004737  050640                  JSR     PC,T26REST              ;SET COMMAND PACKET
036042  004737  050732                  JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
036046  004737  050774                  JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET

                                        ;*************************************************************************
                                        ;
                                        ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                        ;
                                        ;*************************************************************************

036052  004737  016644                  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
036056  103407                          BCS     20$                     ;BR IF INIT WAS OK
036060  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
036064  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
036066                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
036066  104455                                                                          TRAP    C$ERDF
036070  000373                                                                          .WORD   251
036072  003550                                                                          .WORD   SFIERR
036074  011666                                                                          .WORD   SFIMSG
036076                                  20$:

036076  012704  045720                  MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

                                        ;*************************************************************************
                                        ;
                                        ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                        ;
                                        ;*************************************************************************

036102  004737  010332                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
036106  103407                          BCS     26$                     ;BR, IF COMMAND ISSUED OK
036110  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
036114  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
036116                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
036116  104456                                                                          TRAP    C$ERHRD
036120  000374                                                                          .WORD   252
036122  004754                                                                          .WORD   WRTMSG
```

```
                036124  011666                                                  .WORD   SFIMSG
6426            036126                  26$:    CKLOOP                          ;LOOP IF SELECTED
                036126  104406                                                  TRAP    C$CLP1
6427
6428                            ;*****************************************************************
6429                            ;
6430                            ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
6431                            ;
6432                            ;*****************************************************************
6433
6434 036130  004737  010434                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6435 036134  103413                            BCS     30$                     ;BR, IF NO PROBLEM
6436 036136  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR
6437 036142  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
6438 036146  010004                            MOV     R0,R4                   ;PACKET ADDRESS SET UP
6439 036150  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6443 036154                                    ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
                036154  104456                                                  TRAP    C$ERHRD
                036156  000375                                                  .WORD   253
                036160  047404                                                  .WORD   T26RWN
                036162  011700                                                  .WORD   PKTSSR
6444            036164                  30$:    CKLOOP                          ;LOOP IF SELECTED
                036164  104406                                                  TRAP    C$CLP1
6445
6446                            ;*****************************************************************
6447                            ;
6448                            ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
6449                            ;
6450                            ;*****************************************************************
6451
6452 036166  013701  045746                    MOV     T26BFR+6,R1             ;PICK UP XST0
6453 036172  010102                            MOV     R1,R2                   ;SET UP EXPECTED
6454 036174  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6455 036200  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
6456 036202  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
6457 036204  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6461 036210                                    ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                036210  104456                                                  TRAP    C$ERHRD
                036212  000376                                                  .WORD   254
                036214  047115                                                  .WORD   T26BOT
                036216  016344                                                  .WORD   EXPREC
6467            036220                  40$:    CKLOOP                          ;LOOP IF SELECTED
                036220  104406                                                  TRAP    C$CLP1
6463 036222  012703  000400                    MOV     #256.,R3                ;RECORD SIZE
6464 036226  013737  003072  046052            MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
6465
6466                            ;*****************************************************************
6467                            ;
6468                            ;WRITE DATA,CVC=1,ACK COMMAND
6469                            ;
6470                            ;*****************************************************************
6471
6472 036234  012737  140005  046050            MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
6473 036242  012704  046050                    MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6474 036246                             65$:
6475 036246  010337  046056                    MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
6476 036252  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

```
 6477 036256  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6478 036262  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6479 036266  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 6480 036272  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6481 036274  001406                        BEQ     75$                     ;BR, IF OK
 6482 036276  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6486                                                                       ;SOFT ERROR GENERATED BECAUSE THE
 6487                                                                       ;WRITE COMMAND IS NOT BEING CHECKED
 6488                                                                       ;HERE. IT WAS CHECKED IN CZTUXA
 6489 036302                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      036302  104457                                                                 TRAP    C$ERSOFT
      036304  000377                                                                 .WORD   255
      036306  005011                                                                 .WORD   WRTERR
      036310  011700                                                                 .WORD   PKTSSR
 6490 036312                        75$:    CKLOOP                          ;LOOP IF SELECTED
      036312  104406                                                                 TRAP    C$CLP1
 6491 036314  012703  001000                MOV     #512.,R3                ;RECORD SIZE
 6492 036320  013737  003072  046052        MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
 6493
 6494                                ;*****************************************************************
 6495                                ;
 6496                                ;REREAD PREVIOUS,ACK,CVC=1,OPP=1
 6497                                ;
 6498                                ;*****************************************************************
 6499
 6500 036326  012737  161001  046050        MOV     #161001,T26PK3          ;REREAD PREVIOUS,ACK,CVC=1,OPP=1
 6501 036334  012704  046050        165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6502 036340  010337  046056                MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 6503 036344  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6504 036350  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6505 036354  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6506 036360  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
 6507 036364  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6508 036366  001406                        BEQ     170$                    ;BR, IF OK
 6509 036370  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6513 036374                                ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      036374  104456                                                                 TRAP    C$ERHRD
      036376  000400                                                                 .WORD   256
      036400  050462                                                                 .WORD   T26TRL
      036402  011700                                                                 .WORD   PKTSSR
 6514 036404                        170$:   CKLOOP                          ;LOOP IF SELECTED
      036404  104406                                                                 TRAP    C$CLP1
 6515
 6516                                ;*****************************************************************
 6517                                ;
 6518                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 6519                                ;
 6520                                ;*****************************************************************
 6521
 6522 036406  013701  045746                MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
 6523 036412  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 6524 036414  052702  040000                BIS     #BIT14,R2               ;SET THE RLS BIT IN EXPECTED
 6525 036420  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6526 036422  001406                        BEQ     180$                    ;BR, IF EQUAL (ALL IS WELL)
 6527 036424  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6531 036430                                ERRHRD  ERRNO,T26LOP,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
      036430  104456                                                                 TRAP    C$ERHRD
```

```
        036432  000401                                                          .WORD   257
        036434  050312                                                          .WORD   T26LOP
        036436  016344                                                          .WORD   EXPREC
 6532   036440                  180$.
 6533   036440  013701  045744          MOV     T26BFR+4,R1             ;PICK UP RESIDUAL BYTE COUNTER
 6534   036444  012702  000400          MOV     #256.,R2                ;THIS SHOULD BE THE DIFFERENCE
 6535   036450  020102                  CMP     R1,R2                   ;IS THE DIFFERENCE CORRECT
 6536   036452  001406                  BEQ     190$                    ;BR, IF CORRECT
 6537   036454  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6541   036460                          ERRHRD  ERRNO,T26PBP,EXPREC     ;RBPCR NOT CORRECT
        036460  104456                                                          TRAP    C$ERHRD
        036462  000402                                                          .WORD   258
        036464  050374                                                          .WORD   T26PBP
        036466  016344                                                          .WORD   EXPREC
 6542   036470                  190$:   CKLOOP                          ;LOOP IF SELECTED
        036470  104406                                                          TRAP    C$CLP1
 6543   036472  012703  001000          MOV     #512.,R3                ;RECORD SIZE
 6544   036476  013737  003072  046052  MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
 6545
 6546                                   ;*************************************************************************
 6547                                   ;
 6548                                   ;REREAD PREVIOUS,ACK,CVC=1,OPP=0
 6549                                   ;
 6550                                   ;*************************************************************************
 6551
 6552   036504  012737  141001  046050  MOV     #141001,T26PK3          ;REREAD PREVIOUS,ACK,CVC=1,OPP=0
 6553   036512  012704  046050          MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6554   036516  010337  046056          MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 6555   036522  010465  177776          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6556   036526  004737  017120          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6557   036532  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6558   036536  012702  100204          MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
 6559   036542  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
 6560   036544  001406                  BEQ     270$                    ;BR, IF OK
 6561   036546  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6565   036552                          ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        036552  104456                                                          TRAP    C$ERHRD
        036554  000403                                                          .WORD   259
        036556  050462                                                          .WORD   T26TRL
        036560  011700                                                          .WORD   PKTSSR
 6566   036562                  270$:   CKLOOP                          ;LOOP IF SELECTED
        036562  104406                                                          TRAP    C$CLP1
 6567
 6568                                   ;*************************************************************************
 6569                                   ;
 6570                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 6571                                   ;
 6572                                   ;*************************************************************************
 6573
 6574   036564  013701  045746          MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
 6575   036570  010102                  MOV     R1,R2                   ;SET UP EXPECTED
 6576   036572  052702  040000          BIS     #BIT14,R2               ;SET THE RLS BIT IN EXPECTED
 6577   036576  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
 6578   036600  001406                  BEQ     280$                    ;BR, IF EQUAL (ALL IS WELL)
 6579   036602  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6583   036606                          ERRHRD  ERRNO,T26LOP,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
        036606  104456                                                          TRAP    C$ERHRD
```

```
                036610  000404                                                          .WORD   260
                036612  050312                                                          .WORD   T26LOP
                036614  016344                                                          .WORD   EXPREC
6584            036616                          280$:
6585            036616  013701  045744                  MOV     T26BFR+4,R1             ;PICK UP RESIDUAL BYTE COUNTER
6586            036622  012702  000400                  MOV     #256.,R2                ;THIS SHOULD BE THE DIFFERENCE
6587            036626  020102                          CMP     R1,R2                   ;IS THE DIFFERENCE CORRECT
6588            036630  001405                          BEQ     290$                    ;BR, IF CORRECT
6592            036634                                  ERRHRD  ERRNO,T26PBP,EXPREC     ;RBPCR NOT CORRECT
                036634  104456                                                          TRAP    C$ERHRD
                036636  000404                                                          .WORD   260
                036640  050374                                                          .WORD   T26PBP
                036642  016344                                                          .WORD   EXPREC
6593            036644                          290$:   CKLOOP                          ;LOOP IF SELECTED
                036644  104406                                                          TRAP    C$CLP1
6594            036646                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
                036646                                                                          L10054:
                036646  104403                                                          TRAP    C$ESUB
6595            036650  023727  002170  000031          CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
6596            036656  002402                          BLT     999$                            ;BR, IF LESS THAN 25
6597            036660  004737  020152                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
6598            036664                          999$:
```

```
                                ;+
                                ;
                                ;TEST 6, SUBTEST 7
                                ;
                                ;
                                ;VERIFIES THAT THE REREAD NEXT COMMAND WITH OPP=0
                                ;AND SWB=0 OPERATES PROPERLY. THE TAPE IS FIRST
                                ;REWOUND AND THEN WRITTEN WITH A SERIES OF TEST
                                ;RECORDS VARYING IN LENGTH AND DATA CONTENT. THE TAPE
                                ;IS THEN REWOUND AGAIN. FOR EACH TEST RECORD, THE
                                ;TAPE IS SPACED FORWARD ONE RECORD AND A REREAD
                                ;NEXT COMMAND ISSUED. RESULTS (STATUS, DATA,
                                ;ETC.) ARE VERIFIED. THE BYTE COUNT ON EACH REREAD
                                ;NEXT COMMAND IS SET TO THE LENGTH OF THE EXPECTED
                                ;RECORD, SO NO EXCEPTIONAL CONDITIONS SHOULD OCCUR.
                                ;
                                ;
                                ;-

 6620 036664                            BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      036664                                                                            T2.7:
      036664  104402                                                                    TRAP    C$BSUB
 6621 036666  004737  050640            JSR     PC,T26REST              ;SET COMMAND PACKET
 6622 036672  004737  050732            JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
 6623 036676  004737  050774            JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
 6624
 6625                                   ;*************************************************************************
 6626                                   ;
 6627                                   ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
 6628                                   ;
 6629                                   ;*************************************************************************
 6630
 6631 036702  004737  016644            JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 6632 036706  103407                    BCS     20$                     ;BR IF INIT WAS OK
 6633 036710  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6637 036714  010001                    MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 6638 036716                            ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      036716  104455                                                                    TRAP    C$ERDF
      036720  000405                                                                    .WORD   261
      036722  003550                                                                    .WORD   SFIERR
      036724  011666                                                                    .WORD   SFIMSG
 6639 036726                            20$:
 6640
 6641 036726  012704  045720            MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 6642
 6643                                   ;*************************************************************************
 6644                                   ;
 6645                                   ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 6646                                   ;
 6647                                   ;*************************************************************************
 6648
 6649 036732  004737  010332            JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 6650 036736  103407                    BCS     26$                     ;BR, IF COMMAND ISSUED OK
 6651 036740  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6655 036744  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 6656 036746                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
```

```
        036746  104456                                                          TRAP    C$ERHRD
        036750  000406                                                          .WORD   262
        036752  004754                                                          .WORD   WRTMSG
        036754  011666                                                          .WORD   SFIMSG
 6657   036756                          26$:    CKLOOP                          ;LOOP IF SELECTED
        036756  104406                                                          TRAP    C$CLP1
 6658
 6659                                   ;*****************************************************************
 6660                                   ;
 6661                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 6662                                   ;
 6663                                   ;*****************************************************************
 6664
 6665   036760  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 6666   036764  103413                          BCS     30$                     ;BR, IF NO PROBLEM
 6667   036766  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
 6668   036772  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
 6669   036776  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
 6670   037000  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6674   037004                                  ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
        037004  104456                                                          TRAP    C$ERHRD
        037006  000407                                                          .WORD   263
        037010  047404                                                          .WORD   T26RWN
        037012  011700                                                          .WORD   PKTSSR
 6675   037014                          30$:    CKLOOP                          ;LOOP IF SELECTED
        037014  104406                                                          TRAP    C$CLP1
 6676
 6677                                   ;*****************************************************************
 6678                                   ;
 6679                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 6680                                   ;
 6681                                   ;*****************************************************************
 6682
 6683   037016  013701  045746                  MOV     T26BFR+6,R1             ;PICK UP XST0
 6684   037022  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 6685   037024  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 6686   037030  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 6687   037032  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
 6688   037034  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6692   037040                                  ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        037040  104456                                                          TRAP    C$ERHRD
        037042  000410                                                          .WORD   264
        037044  047115                                                          .WORD   T26BOT
        037046  016344                                                          .WORD   EXPREC
 6693   037050                          40$:    CKLOOP                          ;LOOP IF SELECTED
        037050  104406                                                          TRAP    C$CLP1
 6694   037052  012703  000400                  MOV     #256.,R3                ;RECORD SIZE
 6695   037056  013737  003072  046052          MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
 6696
 6697                                   ;*****************************************************************
 6698                                   ;
 6699                                   ;WRITE DATA,CVC=1,ACK COMMAND
 6700                                   ;
 6701                                   ;*****************************************************************
 6702
 6703   037064  012737  140005  046050          MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
 6704   037072  012704  046050                  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
```

```
 6705 037076                          65$:
 6706 037076  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
 6707 037100  004737  020372                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 6708 037104  010337  046056                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 6709 037110  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6710 037114  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6711 037120  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6712 037124  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 6713 037130  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 6714 037132  001406                          BEQ     75$                     ;BR, IF OK
 6715 037134  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6719                                                                         ;SOFT ERROR GENERATED BECAUSE THE
 6720                                                                         ;WRITE COMMAND IS NOT BEING CHECKED
 6721                                                                         ;HERE. IT WAS CHECKED IN CZTUXA
 6722 037140                                  ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      037140  104457                                                                 TRAP    C$ERSOFT
      037142  000411                                                                 .WORD   265
      037144  005011                                                                 .WORD   WRTERR
      037146  011700                                                                 .WORD   PKTSSR
 6723 037150                          75$:    CKLOOP                          ;LOOP IF SELECTED
      037150  104406                                                                 TRAP    C$CLP1
 6724 037152  005723                          TST     (R3)+                   ;BUMP RECORD SIZE
 6725 037154  022703  000414                  CMP     #268.,R3                ;END OF RECORD YET
 6726 037160  001346                          BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 6727 037162                          80$:    CKLOOP                          ;LOOP IF SELECTED
      037162  104406                                                                 TRAP    C$CLP1
 6728 037164                          120$:
 6729
 6730                                 ;*****************************************************************
 6731                                 ;
 6732                                 ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 6733                                 ;
 6734                                 ;*****************************************************************
 6735
 6736 037164  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 6737 037170  103413                          BCS     130$                    ;BR, IF NO PROBLEM
 6738 037172  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
 6739 037176  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
 6740 037202  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
 6741 037204  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6745 037210                                  ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
      037210  104456                                                                 TRAP    C$ERHRD
      037212  000412                                                                 .WORD   266
      037214  047404                                                                 .WORD   T26RWN
      037216  011700                                                                 .WORD   PKTSSR
 6746 037220                          130$:   CKLOOP                          ;LOOP IF SELECTED
      037220  104406                                                                 TRAP    C$CLP1
 6747
 6748                                 ;*****************************************************************
 6749                                 ;
 6750                                 ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 6751                                 ;
 6752                                 ;*****************************************************************
 6753
 6754 037222  013701  045746                  MOV     T26BFR+6,R1             ;PICK UP XST0
 6755 037226  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 6756 037230  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
```

```
 6757 037234  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 6758 037236  001406                        BEQ     140$                    ;BR, IF EQUAL (OK)
 6759 037240  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6763 037244                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      037244  104456                                                                TRAP    C$ERHRD
      037246  000413                                                                .WORD   267
      037250  047115                                                                .WORD   T26BOT
      037252  016344                                                                .WORD   EXPREC
 6764 037254                        140$:   CKLOOP                          ;LOOP IF SELECTED
      037254  104406                                                                TRAP    C$CLP1
 6765 037256  012737  000400  046102          MOV     #256.,T26RSZ            ;STORE START RECORD SIZE
 6766 037264  000420                        BR      150$                    ;SKIP THE SAPCE THIS TIME
 6767
 6768                                ;*****************************************************************
 6769                                ;
 6770                                ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 6771                                ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 6772                                ;
 6773                                ;*****************************************************************
 6774
 6775 037266  012703  00000          145$:   MOV     #1,R3                   ;SPACE ONE RECORD PARAMETER
 6776 037272  004737  01014                  JSR     PC,SPACE                ;CALL SPACE ROUTINE
 6777 037276  103413                        BCS     150$                    ;BR, IF NO PROBLEM WITH SPACE COMMAND
 6778 037300  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
 6779 037304  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
 6780 037310  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
 6781 037312  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6785 037316                                ERRHRD  ERRNO,T26SC,EXPREC      ;POSITION (SPACE RECORDS) FAILED
      037316  104456                                                                TRAP    C$ERHRD
      037320  000414                                                                .WORD   268
      037322  046517                                                                .WORD   T26SC
      037324  016344                                                                .WORD   EXPREC
 6786 037326                        150$:
 6787 037326  013703  046102                MOV     T26RSZ,R3               ;RECORD SIZE
 6788 037332  013737  003072  046052        MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
 6789
 6790                                ;*****************************************************************
 6791                                ;
 6792                                ;REREREAD DATA,CVC=1,ACK COMMAND
 6793                                ;
 6794                                ;*****************************************************************
 6795
 6796 037340  012737  141401  046050        MOV     #141401,T26PK3          ;REREREAD DATA,CVC=1,ACK COMMAND
 6797 037346  012704  046050        165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6798 037352  010337  046056                MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 6799 037356  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6800 037362  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6801 037366  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6802 037372  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 6803 037376  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6804 037400  001406                        BEQ     170$                    ;BR, IF OK
 6805 037402  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6809 037406                                ERRHRD  ERRNO,T26WDC,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
      037406  104456                                                                TRAP    C$ERHRD
      037410  000415                                                                .WORD   269
      037412  047740                                                                .WORD   T26WDC
      037414  011700                                                                .WORD   PKTSSR
```

```
6810 037416                          170$:  CKLOOP                          ;LOOP IF SELECTED
     037416 104406                                                                TRAP    C$CLP1
6811 037420 013702 003072                   MOV     FREE,R2          ;CURRENT BUFFER ADDRESS TO R2
6812 037424 010304                          MOV     R3,R4                    ;CURRENT RECORD SIZE
6813 037426 162704 000400                   SUB     #256.,R4                 ;FIRST LOCATION IN BUFFER
6814 037432 060204                   173$:  ADD     R2,R4                    ;SET UP POINTER
6815 037434 021403                          CMP     (R4),R3                  ;CHECK DATA READ (R3=DATA ALSO)
6816 037436 001410                          BEQ     180$                     ;BR, IF ALL IS WELL
6817 037440 011401                          MOV     (R4),R1                  ;RECD DATA
6818 037442 010302                          MOV     R3,R2                    ;EXPECTED DATA
6819 037444 004737 020100                   JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
6823 037450                                 ERRHRD  ERRNO,T26DTA,EXPREC      ;DATA READ NOT = WRITTEN
     037450 104456                                                                TRAP    C$ERHRD
     037452 000416                                                                .WORD   270
     037454 047162                                                                .WORD   T26DTA
     037456 016344                                                                .WORD   EXPREC
6824 037460                          180$:  CKLOOP                          ;LOOP IF SELECTED
     037460 104406                                                                TRAP    C$CLP1
6825 037462 005724                          TST     (R4)+                    ;BUMP TO NEXT LOCATION
6826 037464 160204                          SUB     R2,R4                    ;CORRECT RECORDS SIZE VALUE
6827 037466 020403                          CMP     R4,R3                    ;END OF RECORD YET
6828 037470 001360                          BNE     173$                     ;BR, IF NOT AT END OF RECORD
6829 037472 005723                          TST     (R3)+                    ;BUMP RECORD SIZE
6830 037474 010337 046102                   MOV     R3,T26RSZ                ;STORE PRESENT RECORD SIZE
6831 037500 022703 000410                   CMP     #264.,R3                 ;END OF RECORD YET
6832 037504 001270                          BNE     145$                     ;BR, IF MORE RECORDS TO READ
6833 037506                          190$:  CKLOOP                          ;LOOP IF SELECTED
     037506 104406                                                                TRAP    C$CLP1
6834 037510                                 ENDSUB                   ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     037510                                                                  L10055:
     037510 104403                                                                TRAP    C$ESUB
6835 037512 023727 002170 000031            CMP     FATFLG,#25.                  ;IS ERROR COUNT AT 25
6836 037520 00240_                          BLT     999$                         ;BR, IF LESS THAN 25
6837 037522 004737 020152                   JSR     PC,CKDROP                    ;TRY TO DROP THE UNIT
6838 037526                          999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 8
                                        ;
                                        ;VERIFIES THAT THE REREAD NEXT COMMAND WITH OPP=0
                                        ;AND SWB=1 OPERATES PROPERLY. THE TEST SEQUENCE IS
                                        ;THE SAME AS THAT USED IN SUBTEST 1, BUT IT IS
                                        ;VERIFIED THAT DATA STORED BY THE COMMAND CONTAINS
                                        ;SWAPPED BYTES.
                                        ;
                                        ;
                                        ;-
6853 037526                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     037526                                                                         T2.8:
     037526  104402                                                                 TRAP    C$BSUB
6854 037530  004737  050640             JSR     PC,T26REST              ;SET COMMAND PACKET
6855 037534  004737  050732             JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
6856 037540  004737  050774             JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
6857
6858                                    ;*****************************************************************
6859                                    ;
6860                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
6861                                    ;
6862                                    ;*****************************************************************
6863
6864 037544  004737  016644             JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
6865 037550  103407                     BCS     20$                     ;BR IF INIT WAS OK
6866 037552  004737  020100             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6870 037556  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
6871 037560                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     037560  104455                                                                 TRAP    C$ERDF
     037562  000417                                                                 .WORD   271
     037564  003550                                                                 .WORD   SFIERR
     037566  011666                                                                 .WORD   SFIMSG
6872 037570                         20$:
6873
6874 037570  012704  045720             MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
6875
6876                                    ;*****************************************************************
6877                                    ;
6878                                    ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
6879                                    ;
6880                                    ;*****************************************************************
6881
6882 037574  004737  010332             JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
6883 037600  103407                     BCS     26$                     ;BR, IF COMMAND ISSUED OK
6884 037602  004737  020100             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6888 037606  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
6889 037610                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     037610  104456                                                                 TRAP    C$ERHRD
     037612  000420                                                                 .WORD   272
     037614  004754                                                                 .WORD   WRTMSG
     037616  011666                                                                 .WORD   SFIMSG
6890 037620                         26$:    CKLOOP                          ;LOOP IF SELECTED
     037620  104406                                                                 TRAP    C$CLP1
6891
```

```
                                ;*****************************************************************
                                ;
                                ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                ;
                                ;*****************************************************************

037622  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
037626  103413                      BCS     30$                     ;BR, IF NO PROBLEM
037630  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR
037634  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
037640  010004                      MOV     R0,R4                   ;PACKET ADDRESS SET UP
037642  004737  020100              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
037646                              ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
037646  104456                                                      TRAP    C$ERHRD
037650  000421                                                      .WORD   273
037652  047404                                                      .WORD   T26RWN
037654  011700                                                      .WORD   PKTSSR
037656                          30$:    CKLOOP                      ;LOOP IF SELECTED
037656  104406                                                      TRAP    C$CLP1

                                ;*****************************************************************
                                ;
                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
                                ;
                                ;*****************************************************************

037660  013701  045746                MOV     T26BFR+6,R1             ;PICK UP XST0
037664  010102                      MOV     R1,R2                   ;SET UP EXPECTED
037666  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
037672  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
037674  001406                      BEQ     40$                     ;BR, IF EQUAL (OK)
037676  004737  020100              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
037702                              ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
037702  104456                                                      TRAP    C$ERHRD
037704  000422                                                      .WORD   274
037706  047115                                                      .WORD   T26BOT
037710  016344                                                      .WORD   EXPREC
037712                          40$:    CKLOOP                      ;LOOP IF SELECTED
037712  104406                                                      TRAP    C$CLP1
037714  012703  000400              MOV     #256.,R3                ;RECORD SIZE
037720  013737  003072  046052      MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS

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

037724  012737  150005  046050        MOV     #150005,T26PK3          ;WRITE DATA,CVC=1,ACK,SWB COMMAND
037734  012704  046050                MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
037740                          65$:
037740  010300                      MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
037742  004737  020372              JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
037746  010337  046056              MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
037752  010465  177776              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
037756  004737  017120              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
037762  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
6945 037766  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
6946 037772  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6947 037774  001406                        BEQ     75$                     ;BR, IF OK
6948 037776  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6952                                                                       ;SOFT ERROR GENERATED BECAUSE THE
6953                                                                       ;WRITE COMMAND IS NOT BEING CHECKED
6954                                                                       ;HERE. IT WAS CHECKED IN CZTUXA
6955 040002                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     040002  104457                                                                TRAP    C$ERSOFT
     040004  000423                                                                .WORD   275
     040006  005011                                                                .WORD   WRTERR
     040010  011700                                                                .WORD   PKTSSR
6956 040012                        75$:    CKLOOP                          ;LOOP IF SELECTED
     040012  104406                                                                TRAP    C$CLP1
6957 040014  005723                        TST     (R3)+                   ;BUMP RECORD SIZE
6958 040016  022703  000414                CMP     #268.,R3                ;END OF RECORD YET
6959 040022  001346                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
6960 040024                        80$:    CKLOOP                          ;LOOP IF SELECTED
     040024  104406                                                                TRAP    C$CLP1
6961 040026                        120$:
6962
6963                               ;*********************************************************************
6964                               ;
6965                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
6966                               ;
6967                               ;*********************************************************************
6968
6969 040026  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6970 040032  103413                        BCS     130$                    ;BR, IF NO PROBLEM
6971 040034  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
6972 040040  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
6973 040044  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
6974 040046  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6978 040052                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     040052  104456                                                                TRAP    C$ERHRD
     040054  000424                                                                .WORD   276
     040056  047404                                                                .WORD   T26RWN
     040060  011700                                                                .WORD   PKTSSR
6979 040062                        130$:   CKLOOP                          ;LOOP IF SELECTED
     040062  104406                                                                TRAP    C$CLP1
6980
6981                               ;*********************************************************************
6982                               ;
6983                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
6984                               ;
6985                               ;*********************************************************************
6986
6987 040064  013701  045746                MOV     T26BFR+6,R1             ;PICK UP XST0
6988 040070  010102                        MOV     R1,R2                   ;SET UP EXPECTED
6989 040072  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6990 040076  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
6991 040100  001406                        BEQ     140$                    ;BR, IF EQUAL (OK)
6992 040102  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6996 040106                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     040106  104456                                                                TRAP    C$ERHRD
     040110  000425                                                                .WORD   277
     040112  047115                                                                .WORD   T26BOT
```

```
                040114  016344                                                          .WORD   EXPREC
 6997           040116                          140$:   CKLOOP                          ;LOOP IF SELECTED
                040116  104406                                                          TRAP    C$CLP1
 6998           040120  012737  000400  046102          MOV     #256.,T26RSZ            ;START RECORD SIZE
 6999           040126  000420                          BR      150$                    ;SKIP SAPCE THIS TIME
 7000
 7001                                                   ;*********************************************************************
 7002                                                   ;
 7003                                                   ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 7004                                                   ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 7005                                                   ;
 7006                                                   ;*********************************************************************
 7007
 7008           040130  012703  000001          145$:   MOV     #1,R3                   ;SPACE ONE RECORD PARAMETER
 7009           040134  004737  010140                  JSR     PC,SPACE                ;CALL SPACE ROUTINE
 7010           040140  103413                          BCS     150$                    ;BR, IF NO PROBLEM WITH SPACE COMMAND
 7011           040142  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
 7012           040146  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
 7013           040152  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
 7014           040154  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7018           040160                                  ERRHRD  ERRNO,T26SC,EXPREC      ;POSITION (SPACE RECORDS) FAILED
                040160  104456                                                          TRAP    C$ERHRD
                040162  000426                                                          .WORD   278
                040164  046517                                                          .WORD   T26SC
                040166  016344                                                          .WORD   EXPREC
 7019           040170                          150$:
 7020           040170  013703  046102                  MOV     T26RSZ,R3               ;RECORD SIZE
 7021           040174  013737  003072  046052          MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
 7022
 7023                                                   ;*********************************************************************
 7024                                                   ;
 7025                                                   ;REREAD DATA,ACK,CVC=1,SWB COMMAND
 7026                                                   ;
 7027                                                   ;*********************************************************************
 7028
 7029           040202  012737  151401  046050          MOV     #151401,T26PK3          ;REREAD DATA,ACK,CVC=1,SWB COMMAND
 7030           040210  012704  046050          165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 7031           040214  010337  046056                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 7032           040220  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7033           040224  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7034           040230  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7035           040234  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 7036           040240  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 7037           040242  001406                          BEQ     170$                    ;BR, IF OK
 7038           040244  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7042           040250                                  ERRHRD  ERRNO,T26WDC,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
                040250  104456                                                          TRAP    C$ERHRD
                040252  000427                                                          .WORD   279
                040254  047740                                                          .WORD   T26WDC
                040256  011700                                                          .WORD   PKTSSR
 7043           040260                          170$:   CKLOOP                          ;LOOP IF SELECTED
                040260  104406                                                          TRAP    C$CLP1
 7044           040262  013702  003072                  MOV     FREE,R2         ;CURRENT BUFFER ADDRESS TO R2
 7045           040266  010304                          MOV     R3,R4                   ;CURRENT RECORD SIZE
 7046           040270  162704  000400                  SUB     #256.,R4                ;FIRST LOCATION IN BUFFER
 7047           040274  060204                  173$:   ADD     R2,R4                   ;SET UP POINTER
 7048           040276  021403                          CMP     (R4),R3                 ;CHECK DATA READ (R3=DATA ALSO)
```

```
 7049 040300  001410                        BEQ     180$                    ;BR, IF ALL IS WELL
 7050 040302  011401                        MOV     (R4),R1                 ;RECD DATA
 7051 040304  010302                        MOV     R3,R2                   ;EXPECTED DATA
 7052 040306  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7056 040312                                ERRHRD  ERRNO,T26DTA,EXPREC     ;DATA READ NOT = WRITTEN
      040312  104456                                                                TRAP    C$ERHRD
      040314  000430                                                                .WORD   280
      040316  047162                                                                .WORD   T26DTA
      040320  016344                                                                .WORD   EXPREC
 7057 040322                        180$:   CKLOOP                          ;LOOP IF SELECTED
      040322  104406                                                                TRAP    C$CLP1
 7058 040324  005724                        TST     (R4)+                   ;BUMP TO NEXT LOCATION
 7059 040326  160204                        SUB     R2,R4                   ;CORRECT RECORDS SIZE VALUE
 7060 040330  020403                        CMP     R4,R3                   ;END OF RECORD YET
 7061 040332  001360                        BNE     173$                    ;BR, IF NOT AT END OF RECORD
 7062 040334  005723                        TST     (R3)+                   ;BUMP RECORD SIZE
 7063 040336  010337  046102                MOV     R3,T26RSZ               ;STORE RECORD SIZE
 7064 040342  022703  000410                CMP     #264.,R3                ;END OF RECORD YET
 7065 040346  001270                        BNE     145$                    ;BR, IF MORE RECORDS TO WRITE
 7066 040350                        190$:   CKLOOP                          ;LOOP IF SELECTED
      040350  104406                                                                TRAP    C$CLP1
 7067 040352                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      040352                                                                    L10056:
      040352  104403                                                                TRAP    C$ESUB
 7068 040354  023727  002170  000031                CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 7069 040362  002402                                BLT     999$                    ;BR, IF LESS THAN 25
 7070 040364  004737  020152                        JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 7071 040370                        999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 9
                                        ;
                                        ;VERIFIES THAT THE REREAD NEXT COMMAND WITH OPP=1
                                        ;(READ FORWARD, SPACE REVERSE) AND SUB=0 OPERATES
                                        ;PROPERLY. THE TAPE IS FIRST REWOUND AND THEN WRITTEN
                                        ;WITH A SERIES OF TEST RECORDS VARYING IN LENGTH AND
                                        ;DATA CONTENT; THE FIRST FOUR BYTES OF EACH RECORD
                                        ;CONTAIN ITS RECORD NUMBER (INDICATING POSITION ON
                                        ;TAPE). THE TAPE IS THEN REWOUND AGAIN. FOR EACH
                                        ;TEST RECORD, THE FOLLOWING SEQUENCE IS EXECUTED.
                                        ;
                                        ;1.      THE REREAD NEXT COMMAND IS ISSUED
                                        ;        AND THE RESULTS CHECKED
                                        ;
                                        ;2.      A READ FORWARD COMMAND IS THEN ISSUED AND THE
                                        ;        DATA IS CHECKED TO VERIFY THAT THE TAPE WAS
                                        ;        POSITIONED PROPERLY AFTER THE REREAD NEXT
                                        ;        COMMAND (E.G. THE TAPE SHOULD HAVE BEEN LEFT
                                        ;        POSITIONED AT THE START OF THE TEST RECORD). THE
                                        ;        READ FORWARD COMMAND LEAVES THE TAPE POSITIONED
                                        ;        PROPERLY AT THE START OF THE NEXT TEST RECORD.
                                        ;
                                        ;THE BYTE COUNT ON EACH REREAD NEXT COMMAND IS SET
                                        ;TO THE LENGTH OF THE EXPECTED RECORD, SO NO
                                        ;EXCEPTIONAL CONDITIONS SHOULD OCCUR.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
                                        ;
040370                                          BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
040370                                                                                  T2.9:
040370  104402                                                                          TRAP    C$BSUB
040372  004737  050640                        JSR     PC,T26REST          ;SET COMMAND PACKET
040376  005037  046076                        CLR     T26CNT              ;CLEAR TAPE RECORD COUNTER
040402  004737  050732                        JSR     PC,T26RT2           ;SET UP OTHER COMMAND PACKET
040406  004737  050774                        JSR     PC,T26RT3           ;SET UP OTHER COMMAND PACKET
                                        ;
                                        ;*************** ******************************************************
                                        ;
                                        ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                        ;
                                        ;*************** ******************************************************
                                        ;
040412  004737  016644                        JSR     PC,SOFINIT          ;DO INITIALIZE ON CONTROLLER
040416  103407                                BCS     20$                 ;BR IF INIT WAS OK
040420  004737  020100                        JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
040424  010001                                MOV     R0,R1               ;CONTENTS OF TSSR REGISTER
040426                                          ERRDF   ERR[illegible] SFIERR,SFIMSG    ;FATAL ERROR TSSR WAS NOT OK
040426  104455                                                                          TRAP    C$ERDF
040430  000431                                                                          .WORD   281
040432  003550                                                                          .WORD   SFIERR
040434  011666                                                                          .WORD   SFIMSG
040436                                  20$.
```

```
040436  012704  045720          MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

                        ;*******************************************************************
                        ;
                        ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                        ;
                        ;*******************************************************************

040442  004737  010332          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
040446  103407                  BCS     26$                     ;BR, IF COMMAND ISSUED OK
040450  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
040454  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
040456                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
040456  104456                                                          TRAP    C$ERHRD
040460  000432                                                          .WORD   282
040462  004754                                                          .WORD   WRTMSG
040464  011666                                                          .WORD   SFIMSG
040466                  26$:    CKLOOP                          ;LOOP IF SELECTED
040466  104406                                                          TRAP    C$CLP1

                        ;*******************************************************************
                        ;
                        ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                        ;
                        ;*******************************************************************

040470  004737  010434          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
040474  103413                  BCS     30$                     ;BR, IF NO PROBLEM
040476  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR
040502  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
040506  010004                  MOV     R0,R4                   ;PACKET ADDRESS SET UP
040510  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
040514                          ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
040514  104456                                                          TRAP    C$ERHRD
040516  000433                                                          .WORD   283
040520  047404                                                          .WORD   T26RWN
040522  011700                                                          .WORD   PKTSSR
040524                  30$:    CKLOOP                          ;LOOP IF SELECTED
040524  104406                                                          TRAP    C$CLP1

                        ;*******************************************************************
                        ;
                        ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
                        ;
                        ;*******************************************************************

040526  013701  045746          MOV     T26BFR+6,R1             ;PICK UP XST0
040532  010102                  MOV     R1,R2                   ;SET UP EXPECTED
040534  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
040540  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
040542  001406                  BEQ     40$                     ;BR, IF EQUAL (OK)
040544  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
040550                          ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
040550  104456                                                          TRAP    C$ERHRD
040552  000434                                                          .WORD   284
040554  047115                                                          .WORD   T26BOT
```

```
                040556  016344                                                          .WORD   EXPREC
7180            040560                          40$:    CKLOOP                          ;LOOP IF SELECTED
                040560  104406                                                          TRAP    C$CLP1
7181            040562  012703  000400                  MOV     #256.,R3                ;RECORD SIZE
7182            040566  013737  003072  046052          MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
7183
7184                                                    ;*****************************************************************
7185                                                    ;
7186                                                    ;WRITE DATA,..,C=1,ACK COMMAND
7187                                                    ;
7188                                                    ;*****************************************************************
7189
7190            040574  012737  140005  046050          MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
7191            040602  012704  046050                  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
7192            040606                          65$:
7193            040606  010337  046056                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
7194            040612  013777  046076  142252          MOV     T26CNT,@FREE            ;MOVE TAPE RECORD NUMBER TO BUFFER
7195            040620  062737  000001  046076          ADD     #1,T26CNT               ;NUMBER READY FOR NEXT RECORD
7196            040626  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7197            040632  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7198            040636  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7199            040642  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7200            040646  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7201            040650  001406                          BEQ     75$                     ;BR, IF OK
7202            040652  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7206                                                                                    ;SOFT ERROR GENERATED BECAUSE THE
7207                                                                                    ;WRITE COMMAND IS NOT BEING CHECKED
7208                                                                                    ;HERE. IT WAS CHECKED IN CZTUXA
7209            040656                                  ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
                040656  104457                                                          TRAP    C$ERSOFT
                040660  000435                                                          .WORD   285
                040662  005011                                                          .WORD   WRTERR
                040664  011700                                                          .WORD   PKTSSR
7210            040666                          75$:    CKLOOP                          ;LOOP IF SELECTED
                040666  104406                                                          TRAP    C$CLP1
7211            040670  005723                          TST     (R3)+                   ;BUMP THE RECORD SIZE
7212            040672  022703  000414                  CMP     #268.,R3                ;MAXIMUM SIZE YET
7213            040676  001401                          BEQ     120$                    ;BR, IF AT END OF WRITE SEQUENCE
7214            040700  000742                          BR      65$                     ;WRITE MORE RECORDS
7215            040702                          120$:
7216            040702  005037  046076                  CLR     T26CNT                  ;SET RECORD COUNTER BACK TO ZERO
7217
7218                                                    ;*****************************************************************
7219                                                    ;
7220                                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7221                                                    ;
7222                                                    ;*****************************************************************
7223
7224            040706  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7225            040712  103411                          BCS     130$                    ;BR, IF NO PROBLEM
7226            040714  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
7227            040720  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
7228            040722  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7232            040726                                  ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
                040726  104456                                                          TRAP    C$ERHRD
                040730  000436                                                          .WORD   286
                040732  047404                                                          .WORD   T26RWN
```

```
                040734  011700                                                  .WORD   PKTSSR
7233            040736                  130$:   CKLOOP                          ;LOOP IF SELECTED
                040736  104406                                                  TRAP    C$CLP1
7234
7235                                    ;*****************************************************************
7236                                    ;
7237                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
7238                                    ;
7239                                    ;*****************************************************************
7240
7241    040740  013701  045746                MOV     T26BFR+6,R1             ;PICK UP XST0
7242    040744  010102                  MOV     R1,R2                   ;SET UP EXPECTED
7243    040746  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7244    040752  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
7245    040754  001406                  BEQ     135$                    ;BR, IF EQUAL (OK)
7246    040756  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7250    040762                          ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                040762  104456                                                  TRAP    C$ERHRD
                040764  000437                                                  .WORD   287
                040766  047115                                                  .WORD   T26BOT
                040770  016344                                                  .WORD   EXPREC
7251            040772                  135$:   CKLOOP                                  ;LOOP IF SELECTED
                040772  104406                                                  TRAP    C$CLP1
7252    040774  012737  000400  046102        MOV     #256.,T26RSZ            ;STARTING RECORD SIZE
7253    041002  000420                  BR      140$                    ;SKIP OVER THE SAPCE THIS TIME
7254
7255                                    ;*****************************************************************
7256                                    ;
7257                                    ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
7258                                    ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
7259                                    ;
7260                                    ;*****************************************************************
7261
7262    041004  012703  000001        132$:   MOV     #000001,R3              ;SET UP SPACE COMMAND (1 FORWARD)
7263    041010  004737  010140                JSR     PC,SPACE                ;CALL SPACE ROUTINE
7264    041014  103413                  BCS     140$                    ;BR, IF NO TROUBLE
7265    041016  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
7266    041022  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
7267    041026  010004                  MOV     R0,R4                   ;PACKET ADDRESS SET UP
7268    041030  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7272    041034                          ERRHRD  ERRNO,T26SC,PKTSSR      ;SPACE (FORWARD) FAILED
                041034  104456                                                  TRAP    C$ERHRD
                041036  000440                                                  .WORD   288
                041040  046517                                                  .WORD   T26SC
                041042  011700                                                  .WORD   PKTSSR
7273            041044                  140$:   CKLOOP                          ;LOOP IF SELECTED
                041044  104406                                                  TRAP    C$CLP1
7274    041046  013703  046102                MOV     T26RSZ,R3               ;RECORD SIZE
7275    041052  013737  003072  046052  150$:   MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
7276
7277                                    ;*****************************************************************
7278                                    ;
7279                                    ;REREAD DATA,CVC=1,ACK, OPP COMMAND
7280                                    ;
7281                                    ;*****************************************************************
7282
7283    041060  012737  161401  046050        MOV     #161401,T26PK3          ;REREAD DATA,CVC=1,ACK, OPP COMMAND
```

```
 7284 041066  012704  046050          165$:  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 7285 041072  010337  046056                 MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 7286 041076  010465  177776                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7287 041102  004737  017120                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7288 041106  016501  000000                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7289 041112  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
 7290 041116  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
 7291 041120  001406                         BEQ     170$                    ;BR, IF OK
 7292 041122  004737  020100                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7296 041126                                 ERRHRD  ERRNO,T26RRF,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
      041126  104456                                                                 TRAP    C$ERHRD
      041130  000441                                                                 .WORD   289
      041132  046325                                                                 .WORD   T26RRF
      041134  011700                                                                 .WORD   PKTSSR
 7297 041136                         170$:   CKLOOP                          ;LOOP IF SELECTED
      041136  104406                                                                TRAP    C$CLP1
 7298 041140  017701  141726                 MOV     @FREE,R1                        ;FIRST WORD FROM READ BUFFER
 7299 041144  013702  046076                 MOV     T26CNT,R2               ;SET UP EXPECTED
 7300 041150  020102                         CMP     R1,R2                   ;IS TAPE POSITION CORRECT
 7301 041152  001406                         BEQ     190$                    ;KEEP GOING POSITION OK
 7302 041154  004737  020100                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7306 041160                                 ERRHRD  ERRNO,T26WNG,EXPREC     ;TAPE POSITION INCORRECT
      041160  104456                                                                TRAP    C$ERHRD
      041162  000442                                                                .WORD   290
      041164  046106                                                                .WORD   T26WNG
      041166  016344                                                                .WORD   EXPREC
 7307 041170                         190$:   CKLOOP
      041170  104406                                                                TRAP    C$CLP1
 7308 041172  062737  000001  046076         ADD     #1,T26CNT               ;BUMP TAPE RECORD COUNTER
 7309 041200  005723                         TST     (R3)+                   ;NEXT RECORD SIZE
 7310 041202  010337  046102                 MOV     R3,T26RSZ               ;STORE RECORD SIZE
 7311 041206  022703  000412                 CMP     #266.,R3                ;AT MAX SIZE YET
 7312 041212  001402                         BEQ     200$                    ;BR, IF AT END OF THE SUBTEST
 7313 041214  000137  041004                 JMP     132$                    ;KEEP GOING MORE RECORDS
 7314 041220                         200$:
 7315 041220                                 ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      041220                                                                        L10057:
      041220  104403                                                                TRAP    C$ESUB
 7316 041222  023727  002170  000031         CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
 7317 041230  002402                         BLT     999$                            ;BR, IF LESS THAN 25
 7318 041232  004737  020152                 JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 7319 041236                         999$:
```

```
CZTUYAO TU80 FRONT END PRT C    MACRO M1200  29-MAR-83 13:43  PAGE 93
TEST  2- REREADS

                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 10
                                        ;
                                        ;VERIFIES THAT THE REREAD NEXT COMMAND WITH OPP=1
                                        ;AND SUB=1 OPERATES PROPERLY. THE TEST SEQUENCE IS
                                        ;THE SAME THAT IS USED IN SUBTEST 3, BUT IT IS
                                        ;VERIFIED THAT DATA STORED BY THE COMMAND CONTAINS
                                        ;SWAPPED BYTES.
                                        ;
                                        ;
                                        ;
                                        ;-
                                        
041236                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
041236                                                                                  T2.10:
041236  104402                                                                          TRAP    C$BSUB
041240  004737  050640                        JSR     PC,T26REST              ;SET COMMAND PACKET
041244  005037  046076                        CLR     T26CNT                  ;CLEAR TAPE RECORD COUNTER
041250  004737  050732                        JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
041254  004737  050774                        JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET

                                        ;*****************************************************************
                                        ;
                                        ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                        ;
                                        ;*****************************************************************

041260  004737  016644                        JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
041264  103407                              BCS     20$                     ;BR IF INIT WAS OK
041266  004737  020100                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
041272  010001                              MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
041274                                      ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
041274  104455                                                                          TRAP    C$ERDF
041276  000443                                                                          .WORD   291
041300  003550                                                                          .WORD   SFIERR
041302  011666                                                                          .WORD   SFIMSG
041304                                  20$:

041304  012704  045720                        MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

                                        ;*****************************************************************
                                        ;
                                        ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                        ;
                                        ;*****************************************************************

041310  004737  010332                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
041314  103407                              BCS     26$                     ;BR, IF COMMAND ISSUED OK
041316  004737  020100                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
041322  010001                              MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
041324                                      ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
041324  104456                                                                          TRAP    C$ERHRD
041326  000444                                                                          .WORD   292
041330  004754                                                                          .WORD   WRTMSG
041332  011666                                                                          .WORD   SFIMSG
```

```
7374 041334                          26$:    CKLOOP                          ;LOOP IF SELECTED
     041334  104406                                                                  TRAP    C$CLP1
7375
7376                                 ;*****************************************************************
7377                                 ;
7378                                 ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7379                                 ;
7380                                 ;*****************************************************************
7381
7382 041336  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7383 041342  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
7384 041346  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
7385 041352  103407                          BCS     30$                     ;BR, IF NO PROBLEM
7386 041354  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
7387 041356  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7391 041362                                  ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     041362  104456                                                                  TRAP    C$ERHRD
     041364  000445                                                                  .WORD   293
     041366  047404                                                                  .WORD   T26RWN
     041370  011700                                                                  .WORD   PKTSSR
7392 041372                          30$:    CKLOOP                          ;LOOP IF SELECTED
     041372  104406                                                                  TRAP    C$CLP1
7393
7394                                 ;*****************************************************************
7395                                 ;
7396                                 ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
7397                                 ;
7398                                 ;*****************************************************************
7399
7400 041374  013701  045746                  MOV     T26BFR+6,R1             ;PICK UP XST0
7401 041400  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7402 041402  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7403 041406  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
7404 041410  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
7405 041412  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7409 041416                                  ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     041416  104456                                                                  TRAP    C$ERHRD
     041420  000446                                                                  .WORD   294
     041422  047115                                                                  .WORD   T26BOT
     041424  016344                                                                  .WORD   EXPREC
7410 041426                          40$:    CKLOOP                          ;LOOP IF SELECTED
     041426  104406                                                                  TRAP    C$CLP1
7411 041430  012703  000400                  MOV     #256.,R3                ;RECORD SIZE
7412 041434  013737  003072  046052          MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
7413
7414                                 ;*****************************************************************
7415                                 ;
7416                                 ;WRITE DATA,CVC=1,ACK COMMAND
7417                                 ;
7418                                 ;*****************************************************************
7419
7420 041442  012737  140005  046050          MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
7421 041450  012704  046050                  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
7422 041454                          65$:
7423 041454  010337  046056                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
7424 041460  013777  046076  141404          MOV     T26CNT,@FREE            ;MOVE TAPE RECORD NUMBER TO BUFFER
7425 041466  062737  000001  046076          ADD     #1,T26CNT               ;NUMBER READY FOR NEXT RECORD
```

```
7426 041474  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7427 041500  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7428 041504  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7429 041510  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7430 041514  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7431 041516  001406                        BEQ     75$                     ;BR, IF OK
7432 041520  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7436                                                                       ;SOFT ERROR GENERATED BECAUSE THE
7437                                                                       ;WRITE COMMAND IS NOT BEING CHECKED
7438                                                                       ;HERE. IT WAS CHECKED IN CZTUXA
7439 041524                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     041524  104457                                                                TRAP    C$ERSOFT
     041526  000447                                                                .WORD   295
     041530  005011                                                                .WORD   WRTERR
     041532  011700                                                                .WORD   PKTSSR
7440 041534                        75$:    CKLOOP                          ;LOOP IF SELECTED
     041534  104406                                                                TRAP    C$CLP1
7441 041536  005723                        TST     (R3)+                   ;BUMP THE RECORD SIZE
7442 041540  022703  000414                CMP     #268.,R3                ;MAXIMUM SIZE YET
7443 041544  001401                        BEQ     120$                    ;BR, IF AT END OF WRITE SEQUENCE
7444 041546  000742                        BR      65$                     ;WRITE MORE RECORDS
7445 041550                        120$:
7446 041550  005037  046076                CLR     T26CNT                  ;SET RECORD COUNTER BACK TO ZERO
7447
7448                               ;*****************************************************************
7449                               ;
7450                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7451                               ;
7452                               ;*****************************************************************
7453
7454 041554  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7455 041560  103411                        BCS     130$                    ;BR, IF NO PROBLEM
7456 041562  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
7457 041566  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
7458 041570  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7462 041574                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     041574  104456                                                                TRAP    C$ERHRD
     041576  000450                                                                .WORD   296
     041600  047404                                                                .WORD   T26RWN
     041602  011700                                                                .WORD   PKTSSR
7463 041604                        130$:   CKLOOP                          ;LOOP IF SELECTED
     041604  104406                                                                TRAP    C$CLP1
7464
7465                               ;*****************************************************************
7466                               ;
7467                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
7468                               ;
7469                               ;*****************************************************************
7470
7471 041606  013701  045746                MOV     T26BFR+6,R1             ;PICK UP XST0
7472 041612  010102                        MOV     R1,R2                   ;SET UP EXPECTED
7473 041614  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
  74 041620  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
  75 041622  001406                        BEQ     135$                    ;BR, IF EQUAL (OK)
7476 041624  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7480 041630                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     041630  104456                                                                TRAP    C$ERHRD
```

```
        041632  000451                                                          .WORD   297
        041634  047115                                                          .WORD   T26BOT
        041636  016344                                                          .WORD   EXPREC
 7481   041640                          135$:   CKLOOP                                  ;LOOP IF SELECTED
        041640  104406                                                          TRAP    C$CLP1
 7482   041642  012737  000400  046102          MOV     #256.,T26RSZ            ;START RECORD SIZE
 7483   041650  000420                          BR      140$                    ;SKIP OVER SPACE
 7484
 7485                                  ;*****************************************************************
 7486                                  ;
 7487                                  ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 7488                                  ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 7489                                  ;
 7490                                  ;*****************************************************************
 7491
 7492   041652  012703  000001          136$:   MOV     #000001,R3              ;SET UP SPACE COMMAND (1 FORWARD)
 7493   041656  004737  010140                  JSR     PC,SPACE                ;CALL SPACE ROUTINE
 7494   041662  103413                          BCS     140$                    ;BR, IF NO TROUBLE
 7495   041664  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
 7496   041670  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
 7497   041674  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
 7498   041676  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7502   041702                                  ERRHRD  ERRNO,T26SC,PKTSSR      ;SPACE (FORWARD) FAILED
        041702  104456                                                          TRAP    C$ERHRD
        041704  000452                                                          .WORD   298
        041706  046517                                                          .WORD   T26SC
        041710  011700                                                          .WORD   PKTSSR
 7503   041712                          140$:   CKLOOP                          ;LOOP IF SELECTED
        041712  104406                                                          TRAP    C$CLP1
 7504   041714  013703  046102                  MOV     T26RSZ,R3               ;RECORD SIZE
 7505   041720  013737  003072  046052  150$:   MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
 7506
 7507                                  ;*****************************************************************
 7508                                  ;
 7509                                  ;REREAD DATA,CVC=1,ACK, OPP COMMAND
 7510                                  ;
 7511                                  ;*****************************************************************
 7512
 7513   041726  012737  161401  046050          MOV     #161401,T26PK3          ;REREAD DATA,CVC=1,ACK, OPP COMMAND
 7514   041734  012704  046050          165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 7515   041740  010337  046056                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 7516   041744  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7517   041750  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7518   041754  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7519   041760  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 7520   041764  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 7521   041766  001406                          BEQ     170$                    ;BR, IF OK
 7522   041770  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7526   041774                                  ERRHRD  ERRNO,T26RRF,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
        041774  104456                                                          TRAP    C$ERHRD
        041776  000453                                                          .WORD   299
        042000  046325                                                          .WORD   T26RRF
        042002  011700                                                          .WORD   PKTSSR
 7527   042004                          170$:   CKLOOP                          ;LOOP IF SELECTED
        042004  104406                                                          TRAP    C$CLP1
 7528   042006  017701  141060                  MOV     @FREE,R1                        ;FIRST WORD FROM READ BUFFER
 7529   042012  013702  046076                  MOV     T26CNT,R2               ;SET UP EXPECTED
```

```
 7530 042016  020102                        CMP     R1,R2                   ;IS TAPE POSITION CORRECT
 7531 042020  001406                        BEQ     190$                    ;KEEP GOING POSITION OK
 7532 042022  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7536 042026                                ERRHRD  ERRNO,T26WNG,EXPREC     ;TAPE POSITION INCORRECT
      042026  104456                                                                TRAP    C$ERHRD
      042030  000454                                                                .WORD   300
      042032  046106                                                                .WORD   T26WNG
      042034  016344                                                                .WORD   EXPREC
 7537 042036                        190$:   CKLOOP
      042036  104406                                                                TRAP    C$CLP1
 7538 042040  062737  000001  046076            ADD     #1,T26CNT               ;BUMP TAPE RECORD COUNTER
 7539 042046  005723                            TST     (R3)+                   ;NEXT RECORD SIZE
 7540 042050  010337  046102                    MOV     R3,T26RSZ               ;STORE RECORD SIZE
 7541 042054  022703  000412                    CMP     #266.,R3                ;AT MAX SIZE YET
 7542 042060  001402                            BEQ     220$                    ;BR, IF AT END OF THE SUBTEST
 7543 042062  000137  041652                    JMP     136$                    ;KEEP GOING MORE RECORDS
 7544 042066                        220$:
 7545 042066                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      042066                                                                        L10060:
      042066  104403                                                                TRAP    C$ESUB
 7546 042070  023727  002170  000031            CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
 7547 042076  002402                            BLT     999$                            ;BR, IF LESS THAN 25
 7548 042100  004737  020152                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 7549 042104                        999$:
```

```
                                ;+
                                ;
                                ;TEST 2, SUBTEST 11
                                ;
                                ;VERIFIES THAT A REREAD NEXT COMMAND READING A
                                ;RECORD LONGER THAN THE SPECIFIED BYTE COUNT CAUSES
                                ;TAPE STATUS ALERT TERMINATION WITH THE RECORD LENGTH
                                ;LONG (RLL) BIT SET. RESULTS ARE VERIFIED FOR BOTH
                                ;STATES OF OPP (0 AND 1).
                                ;
                                ;
                                ;
                                ;-


042104                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
042104                                                                                  T2.11:
042104  104402                                                                          TRAP    C$BSUB
042106  004737  050640                    JSR     PC,T26REST              ;SET COMMAND PACKET
042112  004737  050732                    JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
042116  004737  050774                    JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET

                                ;*********************************************************************
                                ;
                                ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                ;
                                ;*********************************************************************

042122  004737  016644                    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
042126  103407                            BCS     20$                     ;BR IF INIT WAS OK
042130  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042134  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
042136                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
042136  104455                                                                          TRAP    C$ERDF
042140  000455                                                                          .WORD   301
042142  003550                                                                          .WORD   SFIERR
042144  011666                                                                          .WORD   SFIMSG
042146                          20$:

042146  012704  045720                    MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

                                ;*********************************************************************
                                ;
                                ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                ;
                                ;*********************************************************************

042152  004737  010332                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
042156  103407                            BCS     26$                     ;BR, IF COMMAND ISSUED OK
042160  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042164  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
042166                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
042166  104456                                                                          TRAP    C$ERHRD
042170  000456                                                                          .WORD   302
042172  004754                                                                          .WORD   WRTMSG
042174  011666                                                                          .WORD   SFIMSG
042176                          26$:    CKLOOP                          ;LOOP IF SELECTED
```

```
     042176  104406                                                                  TRAP    C$CLP1

                                        ;*****************************************************************
                                        ;
                                        ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                        ;
                                        ;*****************************************************************

     042200  004737  010434                     JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
     042204  016501  000000                     MOV     TSSR(R5),R1             ;GET TSSR
     042210  012702  000200                     MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
     042214  103407                             BCS     30$                     ;BR, IF NO PROBLEM
     042216  010004                             MOV     R0,R4                   ;PACKET ADDRESS SET UP
     042220  004737  020100                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     042224                                     ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     042224  104456                                                                  TRAP    C$ERHRD
     042226  000457                                                                  .WORD   303
     042230  047404                                                                  .WORD   T26RWN
     042232  011700                                                                  .WORD   PKTSSR
     042234                             30$:    CKLOOP                          ;LOOP IF SELECTED
     042234  104406                                                                  TRAP    C$CLP1

                                        ;*****************************************************************
                                        ;
                                        ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
                                        ;
                                        ;*****************************************************************

     042236  013701  045746                     MOV     T26BFR+6,R1             ;PICK UP XSTO
     042242  010102                             MOV     R1,R2                   ;SET UP EXPECTED
     042244  052702  000002                     BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
     042250  020102                             CMP     R1,R2                   ;DOES EXP = REC'D
     042252  001406                             BEQ     40$                     ;BR, IF EQUAL (OK)
     042254  004737  020100                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     042260                                     ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042260  104456                                                                  TRAP    C$ERHRD
     042262  000460                                                                  .WORD   304
     042264  047115                                                                  .WORD   T26BOT
     042266  016344                                                                  .WORD   EXPREC
     042270                             40$:    CKLOOP                          ;LOOP IF SELECTED
     042270  104406                                                                  TRAP    C$CLP1
     042272  012703  001000                     MOV     #512.,R3                ;RECORD SIZE
     042276  013737  003072  046052             MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS

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

     042304  012737  140005  046050             MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
     042312  012704  046050                     MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
     042316                             65$:
     042316  010337  046056                     MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
     042322  010465  177776                     MOV     R4,TSDB(R5)             ;ISSUE COMMAND
     042326  004737  017120                     JSR     PC,WAITF                ;WAIT FOR SSR TO SET
     042332  016501  000000                     MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
7656 042336  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7657 042342  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7658 042344  001406                        BEQ     75$                     ;BR, IF OK
7659 042346  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7663                                                                       ;SOFT ERROR GENERATED BECAUSE THE
7664                                                                       ;WRITE COMMAND IS NOT BEING CHECKED
7665                                                                       ;HERE. IT WAS CHECKED IN CZTUXA
7666 042352                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     042352  104457                                                                TRAP    C$ERSOFT
     042354  000461                                                                .WORD   305
     042356  005011                                                                .WORD   WRTERR
     042360  011700                                                                .WORD   PKTSSR
7667 042362                        75$:    CKLOOP                          ;LOOP IF SELECTED
     042362  104406                                                                TRAP    C$CLP1
7668
7669                               ;*****************************************************************
7670                               ;
7671                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7672                               ;
7673                               ;*****************************************************************
7674
7675 042364  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7676 042370  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
7677 042374  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
7678 042400  103407                        BCS     130$                    ;BR, IF NO PROBLEM
7679 042402  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
7680 042404  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7684 042410                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     042410  104456                                                                TRAP    C$ERHRD
     042412  000462                                                                .WORD   306
     042414  047404                                                                .WORD   T26RWN
     042416  011700                                                                .WORD   PKTSSR
7685 042420                        130$:   CKLOOP                          ;LOOP IF SELECTED
     042420  104406                                                                TRAP    C$CLP1
7686
7687                               ;*****************************************************************
7688                               ;
7689                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
7690                               ;
7691                               ;*****************************************************************
7692
7693 042422  013701  045746                MOV     T26BFR+6,R1             ;PICK UP XST0
7694 042426  010102                        MOV     R1,R2                   ;SET UP EXPECTED
7695 042430  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7696 042434  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
7697 042436  001406                        BEQ     140$                    ;BR, IF EQUAL (OK)
7698 042440  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7702 042444                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042444  104456                                                                TRAP    C$ERHRD
     042446  000463                                                                .WORD   307
     042450  047115                                                                .WORD   T26BOT
     042452  016344                                                                .WORD   EXPREC
7703 042454                        140$:   CKLOOP                          ;LOOP IF SELECTED
     042454  104406                                                                TRAP    C$CLP1
7704 042456  005303                        DEC     R3                      ;SET RECORD SIZE TO 511.
7705 042460  013737  003072  046052        MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
7706
```

```
                                        ;*****************************************************************
                                        ;
                                        ;REREAD DATA,CVC=1,ACK,OPP=1 COMMAND
                                        ;
                                        ;*****************************************************************

042466  012737  161401  046050        MOV     #161401,T26PK3          ;REREAD DATA,CVC=1,ACK,OPP=1 COMMAND
042474  012704  046050                165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
042500  010337  046056                        MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
042504  010465  177776                        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
042510  004737  017120                        JSR     PC,WAITF                ;WAIT FOR SSR TO SET
042514  016501  000000                        MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
042520  012702  100204                        MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
042524  020102                              CMP     R1,R2                   ;ARE THEY EQUAL
042526  001406                              BEQ     170$                    ;BR, IF OK
042530  004737  020100                      JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042534                                      ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
042534  104456                                                                      TRAP    C$ERHRD
042536  000464                                                                      .WORD   308
042540  050462                                                                      .WORD   T26TRL
042542  011700                                                                      .WORD   PKTSSR
042544                                  170$:   CKLOOP                          ;LOOP IF SELECTED
042544  104406                                                                      TRAP    C$CLP1

                                        ;*****************************************************************
                                        ;
                                        ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
                                        ;
                                        ;*****************************************************************

042546  013701  045746                      MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
042552  010102                              MOV     R1,R2                   ;SET UP EXPECTED
042554  052702  010000                      BIS     #BIT12,R2               ;SET THE RLL BIT IN EXPECTED
042560  020102                              CMP     R1,R2                   ;ARE THEY EQUAL
042562  001406                              BEQ     180$                    ;BR, IF EQUAL (ALL IS WELL)
042564  004737  020100                      JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042570                                      ERRHRD  ERRNO,T26LON,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
042570  104456                                                                      TRAP    C$ERHRD
042572  000465                                                                      .WORD   309
042574  050230                                                                      .WORD   T26LON
042576  016344                                                                      .WORD   EXPREC
042600                                  180$:
042600  012703  000777                      MOV     #511.,R3                ;SET UP SIZE OF RECORD
042604  013737  003072  046052              MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS

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

042612  012737  141401  046050        MOV     #141401,T26PK3          ;REREAD DATA,CVC=1,ACK COMMAND
042620  012704  046050                365$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
042624  010337  046056                        MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
042630  010465  177776                        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
042634  004737  017120                        JSR     PC,WAITF                ;WAIT FOR SSR TO SET
042640  016501  000000                        MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
 7761 042644  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
 7762 042650  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 7763 042652  001406                        BEQ     370$                    ;BR, IF OK
 7764 042654  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7768 042660                                ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
      042660  104456                                                                TRAP    C$ERHRD
      042662  000466                                                                .WORD   310
      042664  050462                                                                .WORD   T26TRL
      042666  011700                                                                .WORD   PKTSSR
 7769 042670                        370$:   CKLOOP                          ;LOOP IF SELECTED
      042670  104406                                                                TRAP    C$CLP1
 7770
 7771                                ;*****************************************************************
 7772                                ;
 7773                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 7774                                ;
 7775                                ;*****************************************************************
 7776
 7777 042672  013701  045746                MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
 7778 042676  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 7779 042700  052702  010000                BIS     #BIT12,R2               ;SET THE RLL BIT IN EXPECTED
 7780 042704  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 7781 042706  001406                        BEQ     380$                    ;BR, IF EQUAL (ALL IS WELL)
 7782 042710  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7786 042714                                ERRHRD  ERRNO,T26LON,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
      042714  104456                                                                TRAP    C$ERHRD
      042716  000467                                                                .WORD   311
      042720  050230                                                                .WORD   T26LON
      042722  016344                                                                .WORD   EXPREC
 7787 042724                        380$:
 7788 042724                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      042724                                                                        L10061:
      042724  104403                                                                TRAP    C$ESUB
 7789 042726  023727  002170  000031                CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 7790 042734  002402                                BLT     999$                    ;BR, IF LESS THAN 25
 7791 042736  004737  020152                        JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 7792 042742                        999$:
```

```
                                ;+
                                ;
                                ;TEST 2, SUBTEST 12
                                ;
                                ;VERIFIES THAT A REREAD NEXT COMMAND READING A
                                ;RECORD SHORTER THAN THE SPECIFIED BYTE COUNT CAUSES
                                ;TAPE STATUS ALERT TERMINATION WITH THE RECORD LENGTH
                                ;SHORT (RLS) BIT SET. IT IS VERIFIED THAT THE
                                ;RESIDUAL BYTE COUNTER (RBPCR) IN THE MESSAGE BUFFER
                                ;CONTAINS THE PROPER NONZERO VALUE (E.G., THE
                                ;DIFFERENCE BETWEEN THE ORIGINAL BYTE COUNT AND THE
                                ;ACTUAL RECORD LENGTH). RESULTS ARE VERIFIED FOR BOTH
                                ;STATES OF OPP (0 AND 1).
                                ;
                                ;
                                ;-
7811 042742                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     042742                                                                     T2.12:
     042742  104402                                                                TRAP    C$BSUB
7812 042744  004737  050640             JSR     PC,T26REST              ;SET COMMAND PACKET
7813 042750  004737  050732             JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
7814 042754  004737  050774             JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
7815
7816                                    ;*********************************************************************
7817                                    ;
7818                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
7819                                    ;
7820                                    ;*********************************************************************
7821
7822 042760  004737  016644             JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
7823 042764  103407                     BCS     20$                     ;BR IF INIT WAS OK
7824 042766  004737  020100             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7828 042772  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
7829 042774                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     042774  104455                                                                TRAP    C$ERDF
     042776  000470                                                                .WORD   312
     043000  003550                                                                .WORD   SFIERR
     043002  011666                                                                .WORD   SFIMSG
7830 043004                             20$:
7831
7832 043004  012704  045720             MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
7833
7834                                    ;*********************************************************************
7835                                    ;
7836                                    ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
7837                                    ;
7838                                    ;*********************************************************************
7839
7840 043010  004737  010332             JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
7841 043014  103407                     BCS     26$                     ;BR, IF COMMAND ISSUED OK
7842 043016  004737  020100             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7846 043022  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
7847 043024                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     043026  104456                                                                TRAP    C$ERHRD
     043030  000471                                                                .WORD   313
     043030  004754                                                                .WORD   WRTMSG
```

```
                043032  011666                                                          .WORD   SFIMSG
 7848           043034                  26$:    CKLOOP                  ;LOOP IF SELECTED
                043034  104406                                                          TRAP    C$CLP1
 7849
 7850                                   ;*****************************************************************
 7851                                   ;
 7852                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 7853                                   ;
 7854                                   ;*****************************************************************
 7855
 7856 043036    004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 7857 043042    016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
 7858 043046    012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
 7859 043052    103407                          BCS     30$                     ;BR, IF NO PROBLEM
 7860 043054    010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
 7861 043056    004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7865 043062                            ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
                043062  104454                                                          TRAP    C$ERHRD
                043064  000472                                                          .WORD   314
                043066  047404                                                          .WORD   T26RWN
                043070  011700                                                          .WORD   PKTSSR
 7866 043072            30$:    CKLOOP                  ;LOOP IF SELECTED
                043072  104406                                                          TRAP    C$CLP1
 7867
 7868                                   ;*****************************************************************
 7869                                   ;
 7870                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 7871                                   ;
 7872                                   ;*****************************************************************
 7873
 7874 043074    013701  045746                  MOV     T26BFR+6,R1             ;PICK UP XST0
 7875 043100    010102                          MOV     R1,R2                   ;SET UP EXPECTED
 7876 043102    052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 7877 043106    020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 7878 043110    001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
 7879 043112    004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7883 043116                            ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                043116  104456                                                          TRAP    C$ERHRD
                043120  000473                                                          .WORD   315
                043122  047115                                                          .WORD   T26BOT
                043124  016344                                                          .WORD   EXPREC
 7884 043126            40$:    CKLOOP                  ;LOOP IF SELECTED
                043126  104406                                                          TRAP    C$CLP1
 7885 043130    012703  000400                  MOV     #256.,R3                ;RECORD SIZE
 7886 043134    013737  003072  046052          MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
 7887
 7888                                   ;*****************************************************************
 7889                                   ;
 7890                                   ;WRITE DATA,CVC=1,ACK COMMAND
 7891                                   ;
 7892                                   ;*****************************************************************
 7893
 7894 043142    012737  140005  046050          MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
 7895 043150    012704  046050                  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 7896 043154                            65$:
 7897 043154    010337  046056                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 7898 043160    010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

```
7899 043164  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7900 043170  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7901 043174  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7902 043200  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7903 043202  001406                        BEQ     75$                     ;BR, IF OK
7904 043204  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7908                                                                       ;SOFT ERROR GENERATED BECAUSE THE
7909                                                                       ;WRITE COMMAND IS NOT BEING CHECKED
7910                                                                       ;HERE. IT WAS CHECKED IN CZTUXA
7911 043210                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     043210  104457                                                                TRAP    C$ERSOFT
     043212  000474                                                                .WORD   316
     043214  005011                                                                .WORD   WRTERR
     043216  011700                                                                .WORD   PKTSSR
7912 043220                        75$:    CKLOOP                          ;LOOP IF SELECTED
     043220  104406                                                                TRAP    C$CLP1
7913 043222                        120$:
7914
7915                               ;*****************************************************************
7916                               ;
7917                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7918                               ;
7919                               ;*****************************************************************
7920
7921 043222  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7922 043226  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
7923 043232  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
7924 043236  103407                        BCS     130$                    ;BR, IF NO PROBLEM
7925 043240  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
7926 043242  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7930 043246                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     043246  104456                                                                TRAP    C$ERHRD
     043250  000475                                                                .WORD   317
     043252  047404                                                                .WORD   T26RWN
     043254  011700                                                                .WORD   PKTSSR
7931 043256                        130$:   CKLOOP                          ;LOOP IF SELECTED
     043256  104406                                                                TRAP    C$CLP1
7932
7933                               ;*****************************************************************
7934                               ;
7935                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
7936                               ;
7937                               ;*****************************************************************
7938
7939 043260  013701  045746                MOV     T26BFR+6,R1             ;PICK UP XST0
7940 043264  010102                        MOV     R1,R2                   ;SET UP EXPECTED
7941 043266  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7942 043272  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
7943 043274  001406                        BEQ     135$                    ;BR, IF EQUAL (OK)
7944 043276  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7948 043302                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     043302  104456                                                                TRAP    C$ERHRD
     043304  000476                                                                .WORD   318
     043306  047115                                                                .WORD   T26BOT
     043310  016344                                                                .WORD   EXPREC
7949 043312                        135$:   CKLOOP                          ;LOOP IF SELECTED
     043312  104406                                                                TRAP    C$CLP1
```

```
 7950 043314  012703  001000                MOV     #512.,R3                ;RECORD SIZE
 7951 043320  013737  003072  046052        MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
 7952
 7953                                ;*****************************************************************
 7954                                ;
 7955                                ;REREAD NEXT,ACK,CVC=1,OPP=1
 7956                                ;
 7957                                ;*****************************************************************
 7958
 7959 043326  012737  161401  046050        MOV     #161401,T26PK3          ;REREAD NEXT,ACK,CVC=1,OPP=1
 7960 043334  012704  046050  165$:  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 7961 043340  010337  046056                MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 7962 043344  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7963 043350  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7964 043354  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7965 043360  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
 7966 043364  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 7967 043366  001406                        BEQ     170$                    ;BR, IF OK
 7968 043370  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7972 043374                                ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      043374  104456                                                                    TRAP    C$ERHRD
      043376  000477                                                                    .WORD   319
      043400  050462                                                                    .WORD   T26TRL
      043402  011700                                                                    .WORD   PKTSSR
 7973 043404                        170$:   CKLOOP                          ;LOOP IF SELECTED
      043404  104406                                                                    TRAP    C$CLP1
 7974
 7975                                ;*****************************************************************
 7976                                ;
 7977                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 7978                                ;
 7979                                ;*****************************************************************
 7980
 7981 043406  013701  045746                MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
 7982 043412  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 7983 043414  052702  040000                BIS     #BIT14,R2               ;SET THE RLS BIT IN EXPECTED
 7984 043420  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 7985 043422  001406                        BEQ     180$                    ;BR, IF EQUAL (ALL IS WELL)
 7986 043424  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7990 043430                                ERRHRD  ERRNO,T26LOP,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
      043430  104456                                                                    TRAP    C$ERHRD
      043432  000500                                                                    .WORD   320
      043434  050312                                                                    .WORD   T26LOP
      043436  016344                                                                    .WORD   EXPREC
 7991 043440                        180$:
 7992 043440  013701  045744                MOV     T26BFR+4,R1             ;PICK UP RESIDUAL BYTE COUNTER
 7993 043444  012702  000400                MOV     #256.,R2                ;THIS SHOULD BE THE DIFFERENCE
 7994 043450  020102                        CMP     R1,R2                   ;IS THE DIFFERENCE CORRECT
 7995 043452  001405                        BEQ     190$                    ;BR, IF CORRECT
 7999 043456                                ERRHRD  ERRNO,T26PBP,EXPREC     ;RBPCR NOT CORRECT
      043456  104456                                                                    TRAP    C$ERHRD
      043460  000500                                                                    .WORD   320
      043462  050374                                                                    .WORD   T26PBP
      043464  016344                                                                    .WORD   EXPREC
 8000 043466                        190$:   CKLOOP                          ;LOOP IF SELECTED
      043466  104406                                                                    TRAP    C$CLP1
 8001 043470  012703  001000                MOV     #512.,R3                ;RECORD SIZE
```

```
 8002 043474  013737  003072  046052          MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
 8003
 8004                                  ;*********************************************************************
 8005                                  ;
 8006                                  ;REREAD NEXT,ACK,CVC=1,OPP=0
 8007                                  ;
 8008                                  ;*********************************************************************
 8009
 8010 043502  012737  141401  046050          MOV     #141401,T26PK3          ;REREAD NEXT,ACK,CVC=1,OPP=0
 8011 043510  012704  046050                  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 8012 043514  010337  046056                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 8013 043520  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 8014 043524  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 8015 043530  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8016 043534  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
 8017 043540  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 8018 043542  001406                          BEQ     270$                    ;BR, IF OK
 8019 043544  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8023 043550                                  ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      043550  104456                                                          TRAP    C$ERHRD
      043552  000501                                                          .WORD   321
      043554  050462                                                          .WORD   T26TRL
      043556  011700                                                          .WORD   PKTSSR
 8024 043560                          270$:   CKLOOP                          ;LOOP IF SELECTED
      043560  104406                                                          TRAP    C$CLP1
 8025
 8026                                  ;*********************************************************************
 8027                                  ;
 8028                                  ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 8029                                  ;
 8030                                  ;*********************************************************************
 8031
 8032 043562  013701  045746                  MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
 8033 043566  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 8034 043570  052702  040000                  BIS     #BIT14,R2               ;SET THE RLS BIT IN EXPECTED
 8035 043574  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 8036 043576  001406                          BEQ     280$                    ;BR, IF EQUAL (ALL IS WELL)
 8037 043600  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8041 043604                                  ERRHRD  ERRNO,T26LOP,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
      043604  104456                                                          TRAP    C$ERHRD
      043606  000502                                                          .WORD   322
      043610  050312                                                          .WORD   T26LOP
      043612  016344                                                          .WORD   EXPREC
 8042 043614                          280$:
 8043 043614  013701  045744                  MOV     T26BFR+4,R1             ;PICK UP RESIDUAL BYTE COUNTER
 8044 043620  012702  000400                  MOV     #256.,R2                ;THIS SHOULD BE THE DIFFERENCE
 8045 043624  020102                          CMP     R1,R2                   ;IS THE DIFFERENCE CORRECT
 8046 043626  001405                          BEQ     290$                    ;BR, IF CORRECT
 8050 043632                                  ERRHRD  ERRNO,T26PBP,EXPREC     ;RBPCR NOT CORRECT
      043632  104456                                                          TRAP    C$ERHRD
      043634  000502                                                          .WORD   322
      043636  050374                                                          .WORD   T26PBP
      043640  016344                                                          .WORD   EXPREC
 8051 043642                          290$:   CKLOOP                          ;LOOP IF SELECTED
      043642  104406                                                          TRAP    C$CLP1
 8052 043644                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      043644                                                                  L10062:
```

```
        043644  104403                                                    TRAP    C$ESUB
   8053 043646  023727  002170  000031          CMP     FATFLG,#25.      ;IS ERROR COUNT AT 25
   8054 043654  002402                          BLT     999$             ;BR, IF LESS THAN 25
   8055 043656  004737  020152                  JSR     PC,CKDROP        ;TRY TO DROP THE UNIT
   8056 043662                          999$:
```

```
                                ;+
                                ;
                                ;TEST 2, SUBTEST 13
                                ;
                                ;VERIFIES THAT A DATA BUFFER ADDRESS REFERENCING
                                ;NONEXISTENT MEMORY CAUSES RECOVERABLE ERROR
                                ;TERMINATION (TC=4 OR 5) WITH NXM=1 AND THAT THE TAPE
                                ;IS ULTIMATELY POSITIONED PROPERLY. ALL COMBINATIONS
                                ;OF REREAD PREVIOUS/NEXT AND OPP=0/1 ARE TESTED.
                                ;
                                ;
                                ;
                                ;-
                                
043662                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
043662                                                                                  T2.13:
043662  104402                                                                          TRAP    C$BSUB
043664  005737  003100        9$:       TST     KTFLG                   ;CHECK FOR KT11
043670  001402                          BEQ     10$                     ;BR, IF NO KT11
043672  000137  044642                  JMP     200$                    ;SKIP TEST IF KT11
043676  004737  050640        10$:      JSR     PC,T26REST              ;SET COMMAND PACKET
043702  005037  046076                  CLR     T26CNT                  ;CLEAR TAPE RECORD COUNTER
043706  004737  050732                  JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
043712  004737  050774                  JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
                                
                                ;*****************************************************************
                                ;
                                ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                ;
                                ;*****************************************************************
                                
043716  004737  016644                  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
043722  103407                          BCS     20$                     ;BR IF INIT WAS OK
043724  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
043730  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
043732                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
043732  104455                                                                          TRAP    C$ERDF
043734  000503                                                                          .WORD   323
043736  003550                                                                          .WORD   SFIERR
043740  011666                                                                          .WORD   SFIMSG
043742                          20$:
                                
043742  012704  045720                  MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                
                                ;*****************************************************************
                                ;
                                ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                ;
                                ;*****************************************************************
                                
043746  004737  010332                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
043752  103407                          BCS     26$                     ;BR, IF COMMAND ISSUED OK
043754  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
043760  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
043762                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
043762  104456                                                                          TRAP    C$ERHRD
```

```
        043764  000504                                                          .WORD   324
        043766  004754                                                          .WORD   WRTMSG
        043770  011660                                                          .WORD   SFIMSG
 8114   043772                  26$:    CKLOOP                          ;LOOP IF SELECTED
        043772  104406                                                          TRAP    C$CLP1
 8115
 8116                           ;*****************************************************************
 8117                           ;
 8118                           ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 8119                           ;
 8120                           ;*****************************************************************
 8121
 8122   043774  004737  010434          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 8123   044000  103411                  BCS     30$                     ;BR, IF NO PROBLEM
 8124   044002  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR
 8125   044006  010004                  MOV     R0,R4                   ;PACKET ADDRESS SET UP
 8126   044010  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8130   044014                          ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
        044014  104456                                                          TRAP    C$ERHRD
        044016  000505                                                          .WORD   325
        044020  047404                                                          .WORD   T26RWN
        044022  011700                                                          .WORD   PKTSSR
 8131   044024                  30$:    CKLOOP                          ;LOOP IF SELECTED
        044024  104406                                                          TRAP    C$CLP1
 8132
 8133                           ;*****************************************************************
 8134                           ;
 8135                           ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 8136                           ;
 8137                           ;*****************************************************************
 8138
 8139   044026  013701  045746          MOV     T26BFR+6,R1             ;PICK UP XST0
 8140   044032  010102                  MOV     R1,R2                   ;SET UP EXPECTED
 8141   044034  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 8142   044040  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
 8143   044042  001406                  BEQ     40$                     ;BR, IF EQUAL (OK)
 8144   044044  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8148   044050                          ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        044050  104456                                                          TRAP    C$ERHRD
        044052  000506                                                          .WORD   326
        044054  047115                                                          .WORD   T26BOT
        044056  016344                                                          .WORD   EXPREC
 8149   044060                  40$:    CKLOOP                          ;LOOP IF SELECTED
        044060  104406                                                          TRAP    C$CLP1
 8150   044062  013737  003072  046052          MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
 8151
 8152                           ;*****************************************************************
 8153                           ;
 8154                           ;WRITE DATA,CVC=1,ACK COMMAND
 8155                           ;
 8156                           ;*****************************************************************
 8157
 8158   044070  012737  140005  046050          MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
 8159   044076  012704  046050                  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 8160   044102  012737  000400  046056  65$:    MOV     #256.,T26SZ             ;SET UP RECORD SIZE IN PACKET
 8161   044110  013777  046076  136754          MOV     T26CNT,@FREE            ;MOVE TAPE RECORD NUMBER TO BUFFER
 8162   044116  062737  000001  046076          ADD     #1,T26CNT               ;NUMBER READY FOR NEXT RECORD
```

```
 8163 044124  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 8164 044130  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 8165 044134  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8166 044140  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 8167 044144  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 8168 044146  001406                        BEQ     75$                     ;BR, IF OK
 8169 044150  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8173                                                                       ;SOFT ERROR GENERATED BECAUSE THE
 8174                                                                       ;WRITE COMMAND IS NOT BEING CHECKED
 8175                                                                       ;HERE. IT WAS CHECKED IN CZTUXA
 8176 044154                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      044154  104457                                                                TRAP    C$ERSOFT
      044156  000507                                                                .WORD   327
      044160  005011                                                                .WORD   WRTERR
      044162  011700                                                                .WORD   PKTSSR
 8177 044164                        75$:    CKLOOP                          ;LOOP IF SELECTED
      044164  104406                                                                TRAP    C$CLP1
 8178 044166  022737  000013  046076        CMP     #11.,T26CNT             ;CHECK NUMBER OF RECORDS WRITTEN
 8179 044174  001401                        BEQ     120$                    ;BR, IF AT END OF WRITE SEQUENCE
 8180 044176  000741                        BR      65$                     ;WRITE MORE RECORDS
 8181 044200                        120$:
 8182 044200  005037  046076                CLR     T26CNT                  ;SET RECORD COUNTER BACK TO ZERO
 8183
 8184                               ;*****************************************************************
 8185                               ;
 8186                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 8187                               ;
 8188                               ;*****************************************************************
 8189
 8190 044204  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 8191 044210  103411                        BCS     130$                    ;BR, IF NO PROBLEM
 8192 044212  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
 8193 044216  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
 8194 044220  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8198 044224                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
      044224  104456                                                                TRAP    C$ERHRD
      044226  000510                                                                .WORD   328
      044230  047404                                                                .WORD   T26RWN
      044232  011700                                                                .WORD   PKTSSR
 8199 044234                        130$:   CKLOOP                          ;LOOP IF SELECTED
      044234  104406                                                                TRAP    C$CLP1
 8200
 8201                               ;*****************************************************************
 8202                               ;
 8203                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 8204                               ;
 8205                               ;*****************************************************************
 8206
 8207 044236  013701  045746                MOV     T26BFR+6,R1             ;PICK UP XST0
 8208 044242  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 8209 044244  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 8210 044250  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 8211 044252  001406                        BEQ     140$                    ;BR, IF EQUAL (OK;
 8212 044254  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8216 044260                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      044260  104456                                                                TRAP    C$ERHRD
      044262  000511                                                                .WORD   329
```

```
                044264  047115                                                  .WORD   T26BOT
                044266  016344                                                  .WORD   EXPREC
8217            044270                  140$:   CKLOOP                          ;LOOP IF SELECTED
                044270  104406                                                  TRAP    C$CLP1
8218            044272  012703  046066          MOV     #T26RN,R3               ;COMMAND BUFFER ADDRESS
8219            044276  012737  177376  046052  150$:   MOV     #177376,T26RB   ;STARTING READ BUFFER ADDRESS
8220            044304  012737  000003  046054          MOV     #000003,T26RB+2 ;SET UP HIGH ORDER ADDRESS BITS
8221
8222                            ;*****************************************************************
8223                            ;
8224                            ;REREAD DATA,IE,ACK, OPP COMMAND
8225                            ;
8226                            ;*****************************************************************
8227
8228            044312  011337  046050          MOV     (R3),T26PK3             ;REREAD DATA,IE,ACK, OPP COMMAND
8229            044316  012704  046050  165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8230            044322  012737  000400  046056  MOV     #256.,T26SZ             ;SET UP RECORD SIZE IN PACKET
8231            044330  010465  177776          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8232            044334  004737  017120          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
8233            044340  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8234            044344  012702  104210          MOV     #SSR!NXM!SC!BIT3,R2     ;SET UP EXPECTED
8235            044350  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
8236            044352  001414                  BEQ     170$                    ;BR, IF OK
8237            044354  031327  001000          BIT     (R3),#BIT9              ;CHECK FOR A READ COMMAND
8238            044360  001403                  BEQ     168$                    ;BR, IF IT WAS A READ COMMAND
8239            044362  030127  000002          BIT     R1,#BIT1                ;WAS BIT1 SET
8240            044366  001006                  BNE     170$                    ;BR, IF REREAD AND BIT1 SET
8241            044370                  168$:
8242            044370  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8246            044374                  ERRHRD  ERRNO,T26RRF,PKTSSR             ;TSSR INCORRECT AFTER REREAD DATA
                044374  104456                                                  TRAP    C$ERHRD
                044376  000512                                                  .WORD   330
                044400  046325                                                  .WORD   T26RRF
                044402  011700                                                  .WORD   PKTSSR
8247            044404                  170$:   CKLOOP                          ;LOOP IF SELECTED
                044404  104406                                                  TRAP    C$CLP1
8248
8249                            ;*****************************************************************
8250                            ;
8251                            ;READ DATA, ACK,CVC=1 COMMAND
8252                            ;
8253                            ;*****************************************************************
8254
8255            044406  012737  140001  046050          MOV     #140001,T26PK3  ;READ DATA, ACK,CVC=1 COMMAND
8256            044414  012737  000400  046056          MOV     #256.,T26SZ     ;SET SIZE INTO PACKET
8257            044422  005037  046054                  CLR     T26RB+2         ;CLEAR OUT HIGH ADDRESS BITS
8258            044426  013737  003072  046052          MOV     FREE,T26RB      ;GIVE READ A GOOD BUFFER
8259            044434  010465  177776                  MOV     R4,TSDB(R5)     ;ISSUE READ DATA COMMAND
8260            044440  004737  017120                  JSR     PC,WAITF        ;WAIT FOR SSR
8261            044444  016501  000000                  MOV     TSSR(R5),R1     ;PICK UP THE TSSR
8262            044450  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
8263            044454  020102                          CMP     R1,R2           ;IS THE TSSR OK
8264            044456  001406                          BEQ     180$            ;BR, IF TSSR OK (GOOD)
8265            044460  004737  020100                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
8269            044464                          ERRHRD  ERRNO,RDERR,PKTSSR      ;READ DATA COMMAND FAILED
                044464  104456                                                  TRAP    C$ERHRD
                044466  000513                                                  .WORD   331
```

```
        044470  005104                                                          .WORD   RDERR
        044472  011700                                                          .WORD   PKTSSR
 8270   044474                  180$:   CKLOOP                  ;LOOP IF SELECTED
        044474  104406                                                          TRAP    C$CLP1
 8271   044476  017701  136370          MOV     @FREE,R1        ;FIRST WORD FROM READ BUFFER
 8272   044502  012702  000001          MOV     #1,R2           ;SET UP EXPECTED
 8273   044506  020102                  CMP     R1,R2           ;IS TAPE POSITION CORRECT
 8274   044510  001406                  BEQ     190$            ;KEEP GOING POSITION OK
 8275   044512  004737  020100          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8279   044516                          ERRHRD  ERRNO,T26WNG,EXPREC     ;TAPE POSITION INCORRECT
        044516  104456                                                          TRAP    C$ERHRD
        044520  000514                                                          .WORD   332
        044522  046106                                                          .WORD   T26WNG
        044524  016344                                                          .WORD   EXPREC
 8280   044526                  190$:   CKLOOP
        044526  104406                                                          TRAP    C$CLP1
 8281
 8282                           ;*****************************************************************
 8283                           ;
 8284                           ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 8285                           ;
 8286                           ;*****************************************************************
 8287
 8288   044530  004737  010434          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
 8289   044534  103411                  BCS     194$            ;BR, IF NO PROBLEM
 8290   044536  016501  000000          MOV     TSSR(R5),R1     ;GET TSSR
 8291   044542  010004                  MOV     R0,R4           ;PACKET ADDRESS SET UP
 8292   044544  004737  020100          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8296   044550                          ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
        044550  104456                                                          TRAP    C$ERHRD
        044552  000515                                                          .WORD   333
        044554  047404                                                          .WORD   T26RWN
        044556  011700                                                          .WORD   PKTSSR
 8297   044560                  194$:   CKLOOP                  ;LOOP IF SELECTED
        044560  104406                                                          TRAP    C$CLP1
 8298
 8299                           ;*****************************************************************
 8300                           ;
 8301                           ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
 8302                           ;
 8303                           ;*****************************************************************
 8304
 8305   044562  013701  045746          MOV     T' BFR+6,R1     ;PICK UP XSTO
 8306   044566  010102                  MOV     R1,R2           ;SET UP EXPECTED
 8307   044570  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
 8308   044574  020102                  CMP     R1,R2           ;DOES EXP = REC'D
 8309   044576  001406                  BEQ     196$            ;BR, IF EQUAL (OK)
 8310   044600  004737  02' 00          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8314   044604                          ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        044604  104456                                                          TRAP    C$ERHRD
        044606  000516                                                          .WORD   334
        044610  047115                                                          .WORD   T26BOT
        044612  016344                                                          .WORD   EXPREC
 8315   044614                  196$:   CKLOOP                  ;LOOP IF SELECTED
        044614  104406                                                          TRAP    C$CLP1
 8316   044616  010302                  MOV     R3,R2                   ;SAVE R3 FOR A MOMENT
 8317
```

```
 8318                                   ;*****************************************************************
 8319                                   ;
 8320                                   ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 8321                                   ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 8322                                   ;
 8323                                   ;*****************************************************************
 8324
 8325 044620  012703  000001                   MOV     #1,R3                   ;SPACE ONE RECORD
 8326 044624  004737  010140                   JSR     PC,SPACE                        ;CALL SPACE ROUTINE
 8327 044630  010203                           MOV     R2,R3                           ;RESTORE R3
 8328 044632  005723                           TST     (R3)+                   ;BUMP COUNTER
 8329 044634  021327  177777                   CMP     (R3),#177777            ;END OF COMMAND BUFFER YET
 8330 044640  001216                           BNE     150$                    ;MORE COMMANDS KEEP GOING
 8331 044642                           200$:
 8332 044642                                   ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      044642                                                                                L10063:
      044642  104403                                                                                  TRAP    C$ESUB
 8333 044644  023727  002170  000031                CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
 8334 044652  002402                           BLT     999$                            ;BR, IF LESS THAN 25
 8335 044654  004737  020152                   JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 8336 044660                           999$:
```

```
 8338                                   ;+
 8339                                   ;
 8340                                   ;TEST 2, SUBTEST 14
 8341                                   ;
 8342                                   ;VERIFIES THAT REREAD PREVIOUS WITH OPP=0 (SPACE
 8343                                   ;REVERSE, READ FORWARD) AND REREAD PREVIOUS WITH OPP=1
 8344                                   ;(READ REVERSE, SPACE FORWARD) ISSUED WHEN THE TAPE
 8345                                   ;POSITIONED AT BOT CAUSE FUNCTION REJECT TERMINATION
 8346                                   ;WITH THE NONEXECUTABLE FUNCTION (NEF) ERROR BIT SET.
 8347                                   ;
 8348                                   ;
 8349                                   ;
 8350                                   ;-
 8351 044660                                   BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      044660                                                                                T2.14:
      044660  104402                                                                           TRAP    C$BSUB
 8352 044662  005003                           CLR     R3                      ;CLEAR TEST COUNTER
 8353 044664  004737  050640                   JSR     PC,T26REST              ;SET COMMAND PACKET
 8354 044670  004737  050732                   JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
 8355 044674  004737  050774                   JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
 8356
 8357                                   ;*************************************************************************
 8358                                   ;
 8359                                   ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
 8360                                   ;
 8361                                   ;*************************************************************************
 8362
 8363 044700  004737  016644                   JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 8364 044704  103407                           BCS     20$                     ;BR IF INIT WAS OK
 8365 044706  004737  020100                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8369 044712  010001                           MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 8370 044714                                   ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      044714  104455                                                                           TRAP    C$ERDF
      044716  000517                                                                           .WORD   335
      044720  003550                                                                           .WORD   SFIERR
      044722  011666                                                                           .WORD   SFIMSG
 8371 044724                           20$:
 8372
 8373 044724  012704  045720                   MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 8374
 8375                                   ;*************************************************************************
 8376                                   ;
 8377                                   ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 8378                                   ;
 8379                                   ;*************************************************************************
 8380
 8381 044730  004737  010332                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 8382 044734  103407                           BCS     25$                     ;BR, IF COMMAND ISSUED OK
 8383 044736  004737  020100                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8387 044742  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 8388 044744                                   ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      044744  104456                                                                           TRAP    C$ERHRD
      044746  000520                                                                           .WORD   336
      044750  004754                                                                           .WORD   WRTMSG
      044752  011666                                                                           .WORD   SFIMSG
 8389 044754                           25$:    CKLOOP                          ;LOOP IF SELECTED
      044754  104406                                                                           TRAP    C$CLP1
```

```
8390
8391                                    ;*****************************************************************
8392                                    ;
8393                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
8394                                    ;
8395                                    ;*****************************************************************
8396
8397 044756  004737  010434            26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
8398 044762  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR
8399 044766  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
8400 044772  103407                            BCS     30$                     ;BR, IF NO PROBLEM
8401 044774  010004                            MOV     R0,R4                   ;PACKET ADDRESS SET UP
8402 044776  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8406 045002                                    ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     045002  104456                                                            TRAP    C$ERHRD
     045004  000521                                                            .WORD   337
     045006  047404                                                            .WORD   T26RWN
     045010  011700                                                            .WORD   PKTSSR
8407 045012                            30$:    CKLOOP                          ;LOOP IF SELECTED
     045012  104406                                                            TRAP    C$CLP1
8408
8409                                    ;*****************************************************************
8410                                    ;
8411                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
8412                                    ;
8413                                    ;*****************************************************************
8414
8415 045014  013701  045746                    MOV     T26BFR+6,R1             ;PICK UP XST0
8416 045020  010102                            MOV     R1,R2                   ;SET UP EXPECTED
8417 045022  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
8418 045026  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
8419 045030  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
8420 045032  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8424 045036                                    ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     045036  104456                                                            TRAP    C$ERHRD
     045040  000522                                                            .WORD   338
     045042  047115                                                            .WORD   T26BOT
     045044  016344                                                            .WORD   EXPREC
8425 045046                            40$:    CKLOOP                          ;LOOP IF SELECTED
     045046  104406                                                            TRAP    C$CLP1
8426 045050  012737  000400  046056            MOV     #256.,T26SZ             ;SET UP RECORD SIZE IN PACKET
8427 045056  013737  003072  046052            MOV     FREE,T26RB              ;ADDRESS OF READ BUFFER
8428 045064  005703                            TST     R3                      ;CHECK NUMBER OF TIMES THROUGH HERE
8429 045066  001404                            BEQ     50$                     ;BR, IF FIRST TIME THROUGH HERE
8430
8431                                    ;*****************************************************************
8432                                    ;
8433                                    ;REREAD,CVC=1,ACK COMMAND
8434                                    ;
8435                                    ;*****************************************************************
8436
8437 045070  012737  161001  046050            MOV     #161001,T26P[illegible]3 ;REREAD,CVC=1,ACK COMMAND
8438 045076  00040[illegible]                  BR      55$                     ;SKIP NEXT COMMAND
8439
8440                                    ;*****************************************************************
8441                                    ;
8442                                    ;REREAD,ACK COMMAND
```

```
8443                                    ;
8444                                    ;*****************************************************************
8445
8446 045100  012737  141001  046050  50$:    MOV     #141001,T26PK3          ;REREAD,ACK COMMAND
8447 045106                          55$:
8448 045106  012704  046050                  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8449 045112                          65$:
8450 045112  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8451 045116  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
8452 045122  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8453 045126  012702  100206                  MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
8454 045132  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
8455 045134  001406                          BEQ     75$                     ;BR, IF OK
8456 045136  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8460 045142                                  ERRHRD  ERRNO,T26WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     045142  104456                                                          TRAP    C$ERHRD
     045144  000523                                                          .WORD   339
     045146  047043                                                          .WORD   T26WDE
     045150  011700                                                          .WORD   PKTSSR
8461 045152                          75$:    CKLOOP                          ;LOOP IF SELECTED
     045152  104406                                                          TRAP    C$CLP1
8462
8463                                    ;*****************************************************************
8464                                    ;
8465                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
8466                                    ;
8467                                    ;*****************************************************************
8468
8469 045154  013701  045746                  MOV     T26BFR+6,R1             ;GET XST0 STATUS WORD
8470 045160  010102                          MOV     R1,R2                   ;SET UP EXPECTED
8471 045162  052702  002000                  BIS     #BIT10,R2               ;SET THE NEF BIT
8472 045166  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
8473 045170  001406                          BEQ     170$                    ;BR, IF EQUAL (GOOD)
8474 045172  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8478 045176                                  ERRHRD  ERRNO,T26NEF,EXPREC     ;NEF SHOULD BE SET
     045176  104456                                                          TRAP    C$ERHRD
     045200  000524                                                          .WORD   340
     045202  046174                                                          .WORD   T26NEF
     045204  016344                                                          .WORD   EXPREC
8479 045206                          170$:
8480 045206  005103                          COM     R3                      ;RESET THE SWITCH
8481 045210  001262                          BNE     26$                     ;BR, IF FIRST TIME THROUGH HERE
8482 045212                                  ENDSUB
     045212                                                                  L10064:
     045212  104403                                                          TRAP    C$ESUB
8483 045214  023727  002170  000031          CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
8484 045222  002402                          BLT     999$                            ;BR, IF LESS THAN 25
8485 045224  004737  020152                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
8486 045230                          999$:
```

```
 8488                                   ;+
 8489                                   ;
 8490                                   ;TEST 2, SUBTEST 15
 8491                                   ;
 8492                                   ;VERIFIES THAT REREAD PREVIOUS WITH OPP=1 (SPACE
 8493                                   ;REVERSE, READ FORWARD) AND REREAD PREVIOUS WITH OPP=1
 8494                                   ;(READ REVERSE, SPACE FORWARD) ISSUED WHEN THE TAPE
 8495                                   ;POSITIONED JUST BEFORE THE FIRST RECORD ON TAPE (BUT
 8496                                   ;NOT AT BOT) CAUSES TAPE STATUS ALERT TERMINATION WITH
 8497                                   ;THE REVERSE INTO BOT (RIB) STATUS BIT SET.
 8498                                   ;
 8499                                   ;
 8500                                   ;
 8501                                   ;-
 8502 045230                                   BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      045230                                                                                    T2.15:
      045230  104402                                                                              TRAP    C$BSUB
 8503 045232  005037  046100                   CLR     T26CNU                  ;CLEAR OUT COUNTER
 8504 045236  004737  050640                   JSR     PC,T26REST              ;SET COMMAND PACKET
 8505 045242  004737  050732                   JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
 8506 045246  004737  050774                   JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
 8507
 8508                                   ;*************************************************************************
 8509                                   ;
 8510                                   ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
 8511                                   ;
 8512                                   ;*************************************************************************
 8513
 8514 045252  004737  016644                   JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 8515 045256  103407                           BCS     20$                     ;BR IF INIT WAS OK
 8516 045260  004737  020100                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8520 045264  010001                           MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 8521 045266                                   ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      045266  104455                                                                            TRAP    C$ERDF
      045270  000525                                                                           .WORD   341
      045272  003550                                                                           .WORD   SFIERR
      045274  011666                                                                           .WORD   SFIMSG
 8522 045276                                   20$:
 8523
 8524 045276  012704  045720                   MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 8525
 8526                                   ;*************************************************************************
 8527                                   ;
 8528                                   ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 8529                                   ;
 8530                                   ;*************************************************************************
 8531
 8532 045302  004737  010332                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 8533 045306  103407                           BCS     25$                     ;BR, IF COMMAND ISSUED OK
 8534 045310  004737  020100                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8538 045314  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 8539 045316                                   ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      045316  104456                                                                            TRAP    C$ERHRD
      045320  000526                                                                           .WORD   342
      045322  004754                                                                           .WORD   WRTMSG
      045324  011666                                                                           .WORD   SFIMSG
 8540 045326                                   25$:    CKLOOP                  ;LOOP IF SELECTED
```

```
045326  104406                                                                     TRAP    C$CLP1

                                   ;*****************************************************************
                                   ;
                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                   ;
                                   ;*****************************************************************

045330  004737  010434             26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
045334  016501  000000                     MOV     TSSR(R5),R1             ;GET TSSR
045340  012702  000200                     MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
045344  103407                             BCS     30$                     ;BR, IF NO PROBLEM
045346  010004                             MOV     R0,R4                   ;PACKET ADDRESS SET UP
045350  004737  020100                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
045354                                     ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
045354  104456                                                                     TRAP    C$ERHRD
045356  000527                                                                     .WORD   343
045360  047404                                                                     .WORD   T26RWN
045362  011700                                                                     .WORD   PKTSSR
045364                             30$:    CKLOOP                          ;LOOP IF SELECTED
045364  104406                                                                     TRAP    C$CLP1

                                   ;*****************************************************************
                                   ;
                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
                                   ;
                                   ;*****************************************************************

045366  013701  045746                     MOV     T26BFR+6,R1             ;PICK UP XST0
045372  010102                             MOV     R1,R2                   ;SET UP EXPECTED
045374  052702  000002                     BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
045400  020102                             CMP     R1,R2                   ;DOES EXP = REC'D
045402  001406                             BEQ     40$                     ;BR, IF EQUAL (OK)
045404  004737  020100                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
045410                                     ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
045410  104456                                                                     TRAP    C$ERHRD
045412  000530                                                                     .WORD   344
045414  047115                                                                     .WORD   T26BOT
045416  016344                                                                     .WORD   EXPREC
045420                             40$:

                                   ;*****************************************************************
                                   ;
                                   ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
                                   ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
                                   ;
                                   ;*****************************************************************

045420  012703  000001                     MOV     #000001,R3              ;SET UP SPACE FORWARD 1 RECORD
045424  004737  010140                     JSR     PC,SPACE                ;ISSUE SPACE COMMAND
045430  103411                             BCS     75$                     ;BR, IF OK
045432  016501  000000                     MOV     TSSR(R5),R1             ;GET STATUS DATA
045436  010004                             MOV     R0,R4                   ;GET PACKET ADDRESS
045440  004737  020100                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
045444                                     ERRHRD  ERRNO,T26WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
045444  104456                                                                     TRAP    C$ERHRD
045446  000531                                                                     .WORD   345
```

```
                045450  047043                                                          .WORD   T26WDE
                045452  011700                                                          .WORD   PKTSSR
8595            045454                  75$:    CKLOOP                  ;LOOP IF SELECTED
                045454  104406                                                          TRAP    C$CLP1
8596
8597                                    ;*********************************************************************
8598                                    ;
8599                                    ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
8600                                    ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
8601                                    ;
8602                                    ;*********************************************************************
8603
8604 045456    012703  100001                  MOV     #100001,R3              ;SET SPACE REVERSE 1 RECORD
8605 045462    004737  010140                  JSR     PC,SPACE                ;ISSUE COMMAND
8606 045466    103411                          BCS     175$                    ;GO ON IF ALL IS WELL
8607 045470    016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8608 045474    010004                          MOV     R0,R4                   ;SET UP EXPECTED (PACKET CONTENTS)
8609 045476    004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8613 045502                                    ERRHRD  ERRNO,T26WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
                045502  104456                                                          TRAP    C$ERHRD
                045504  000532                                                          .WORD   346
                045506  047043                                                          .WORD   T26WDE
                045510  011700                                                          .WORD   PKTSSR
8614 045512                     175$:   CKLOOP                  ;LOOP IF SELECTED
                045512  104406                                                          TRAP    C$CLP1
8615 045514    013737  003072  046052          MOV     FREE,T26RB              ;ADDRESS OF BUFFER
8616 045522    005737  046100                  TST     T26CNU                  ;CHECK FOR TIMES THROUGH HERE
8617 045526    001404                          BEQ     176$                    ;BR, IF FIRST TIME THROUGH
8618
8619                                    ;*********************************************************************
8620                                    ;
8621                                    ;REREAD (PREVIOUS),IE,ACK,OPP=1 CMD.
8622                                    ;
8623                                    ;*********************************************************************
8624
8625 045530    012737  161001  046050          MOV     #161001,T26PK3          ;REREAD (PREVIOUS),IE,ACK,OPP=1 CMD.
8626 045536    000403                          BR      178$                    ;SKIP NEXT COMMAND
8627
8628                                    ;*********************************************************************
8629                                    ;
8630                                    ;REREAD ,ACK,OPP=1 COMMAND
8631                                    ;
8632                                    ;*********************************************************************
8633
8634 045540    012737  141001  046050  176$:   MOV     #141001,T26PK3          ;REREAD ,ACK,OPP=1 COMMAND
8635 045546                     178$:
8636 045546    012704  046050                  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8637 045552    010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8638 045556    004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
8639 045562    016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8640 045566    012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
8641 045572    020102                          CMP     R1,R2                   ;ARE THEY EQUAL
8642 045574    001406                          BEQ     180$                    ;BR, IF OK
8643 045576    004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8647 045602                                    ERRHRD  ERRNO,T26WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
                045602  104456                                                          TRAP    C$ERHRD
                045604  000533                                                          .WORD   347
```

```
                045606  047043                                                          .WORD   T26WDE
                045610  011700                                                          .WORD   PKTSSR
8648            045612                          180$:   CKLOOP                          ;LOOP IF SELECTED
                045612  104406                                                          TRAP    C$CLP1
8649            045614  013701  045754                  MOV     T26BFR+14,R1            ;GET XST3 STATUS WORD
8650            045620  010102                          MOV     R1,R2                   ;SET UP EXPECTED
8651            045622  052702  000001                  BIS     #BIT0,R2                ;SET THE NEF BIT
8652            045626  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
8653            045630  001406                          BEQ     190$                    ;BR, IF EQUAL (GOOD)
8654            045632  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8658            045636                                  ERRHRD  ERRNO,T26NEF,EXPREC     ;NEF SHOULD BE SET
                045636  104456                                                          TRAP    C$ERHRD
                045640  000534                                                          .WORD   348
                045642  046174                                                          .WORD   T26NEF
                045644  016344                                                          .WORD   EXPREC
8659            045646                          190$:
8660            045646  005137  046100                  COM     T26CNU                  ;SET SWITCH THE OTHER WAY
8661            045652  001226                          BNE     26$                     ;BR, IF FIRST TIME THROUGH
8662            045654                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
                045654                                                                  L10065:
                045654  104403                                                          TRAP    C$ESUB
8663            045656  023727  002170  000031          CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
8664            045664  002402                          BLT     999$                            ;BR, IF LESS THAN 25
8665            045666  004737  020152                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
8666            045672                          999$:
8667                                            ;
8668                                            ;
8669                                            ;
8670            045672  004737  017354                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
8671            045676  103002                          BCC     163$                    ;BR, IF NO LOOP REQUIRED
8672            045700  000137  031722                  JMP     T26LOOP                 ;EXECUTE AGAIN
8673            045704                          163$:
8674            045704                                  EXIT    TST                     ;ALL DONE THIS TEST
                045704  104432                                                          TRAP    C$EXIT
                045706  003116                                                          .WORD   L10046-.
```

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CZTUYA0 TU80 FRONT END PRT C    MACRO M1200  29-MAR-83 13:43  PAGE 99
TEST  2: REREADS

 8676                                ;+
 8677                                ;LOCAL STORAGE FOR THIS TEST
 8678                                ;-
 8680 045710                                .BLKB   10-<.-TUV2A&7>
 8682 045720                        T26PACKET:                          ;COMMAND PACKET FOR TEST
 8683 045720  014004                        .WORD   14004               ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
 8684 045722  045730                        .WORD   T26DATA             ;ADDRESS OF CHARACTERISTICS BLOCK
 8685 045724  000000                        .WORD   0
 8686 045726  000012                        .WORD   10.                 ;STARTING VALUE OF BLOCK SIZE
 8687 045730                        T26DATA:                            ;CHARACTERISTICS DATA BLOCK
 8688 045730  045740                        .WORD   T26BFR              ;ADDRESS OF MESSAGE BUFFER
 8689 045732  000000                        .WORD   0
 8690 045734  000024                        .WORD   20.                 ;LENGTH OF MESSAGE BUFFER
 8691 045736  000000                        .WORD   0
 8692 045740                        T26BFR: .BLKW   25.                 ;MESSAGE BUFFER
 8693                                ;
 8694                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
 8695                                ;
 8697 046022                                .BLKB   10-<.-TUV2A&7>
 8699 046030                        T26PK2:
 8700 046030  100006                        .WORD   100006              ;WRITE SUB SYS MEM COMMAND, AND ACK
 8701 046032  046060                        .WORD   T26BF2              ;ADDRESS OF SELECT BLOCK DATA
 8702 046034  000000                        .WORD   0
 8703 046036  000006                        .WORD   6.                  ;SIZE OF DATA PACKET
 8704
 8706 046040                                .BLKB   10-<.-TUV2A&7>
 8708 046050                        T26PK3:
 8709 046050  140005                        .WORD   140005              ;REREAD COMMAND, CVC=1 AND ACK
 8710 046052                        T26RB:
 8711 046052  003072                T26WB:  .WORD   FREE                ;ADDRESS OF WRITE BUFFER
 8712 046054  000000                        .WORD   0
 8713 046056  000000                T26SZ:  .WORD   0                   ;SIZE OF BUFFER (EXTENT)
 8714                                       .EVEN
 8715                                ;
 8716 046060                        T26BF2:
 8717 046060     010                T26BS0: .BYTE   10                  ;BSEL0 AREA
 8718 046061     200                T26BS1: .BYTE   200                 ;BSEL1 AREA
 8719 046062  000000                T26S2:  .WORD   0                   ;SEL 2 AREA
 8720 046064  000000                T26S3:  .WORD   0                   ;DATA AREA
 8721                                ;
 8722                                       .EVEN
 8723                                ;TAPE MOTION PACKET COMMAND VALUES
 8724 046066  140001                T26RN:  .WORD   140001              ;READ DATA
 8725 046070  141401                        .WORD   141401              ;REREAD NEXT OPP=0
 8726 046072  161401                        .WORD   161401              ;REREAD NEXT OPP=1
 8727 046074  177777                        .WORD   177777              ;END OF DATA
 8728                                ;
 8729 046076  000000                T26CNT: .WORD   0                   ;TAPE RECORD COUNTER STORAGE AREA
 8730 046100  000000                T26CNU: .WORD   0                   ;TAPE RECORD COUNTER STORAGE AREA
 8731 046102  000000                T26RSZ: .WORD   0                   ;RECORD STORAGE SIZE  AREA
 8732 046104  000000                T26DLY: .WORD   0                   ;DELAY COUNTER AREA
```

```
8734
8735                                    ;+
8736                                    ;LOCAL TEXT MESSAGES FOR TEST
8737                                    ;-
8738
8739
8740 046106      124     141     160    T26WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
8741 046174      122     105     122    T26NEF: .ASCIZ  'REREAD PREVIOUS, At BOT, Failed To Set NEF (XSTO)'
8742 046256      124     123     123    T26RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
8743 046325      122     105     122    T26RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
8744 046422      122     105     122    T26RRG: .ASCIZ  'REREAD Previous (Read Reverse, Space Forward) Command Failed'
8745 046517      120     117     123    T26SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
8746 046601      122     111     102    T26L R: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
8747 046651      124     123     123    T26WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
8748 046726      111     154     154    T26LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
8749 047007      122     105     122    T26SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
8750 047043      124     123     123    T26WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
8751 047115      124     141     160    T26BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
8752 047162      104     141     164    T26DTA: .ASCIZ  'Data Written To Tape Not Equal To Data Read From Tape'
8753 047250      122     105     122    T26EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
8754 047327      124     123     123    T26TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
8755 047404      122     145     167    T26RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
8756 047453      122     101     115    T26RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
8757 047526      124     123     123    T26AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
8758 047575      104     162     151    T26OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
8759 047650      124     123     123    T26WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
8760 047740      124     123     123    T26WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
8761 050013      103     126     103    T26VCK: .ASCIZ  'CVC Set, Didn't Reset VCK In Message Buffer'
8762 050066      124     123     102    T26BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
8763 050141      127     122     111    T26WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
8764 050230      122     145     141    T26LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
8765 050312      122     145     141    T26LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
8766 050377      122     145     163    T26PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
8767 050462      122     145     141    T26TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
8768 050550      104     141     164    T26NEQ: .ASCIZ  'Data REREAD From Tape Not Correct, After SWB=1'
8769 050627      122     145     162    TST26ID:        .ASCIZ  'Rereads'
8770                                            .EVEN
8771                                    ;+
8772                                    ;
8773                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
8774                                    ;WRITE SUBSYSTEM MEMORY COMMAND
8775                                    ;
8776                                    ;-
8777
8778 050640                              T26REST:
8779 050640                                      SAVREG                          ;SAVE THE REGISTERS
8780 050644  012701  045720                        MOV     #T26PACKET,R1           ;START OF THE PACKET
8781 050650  012721  140004                        MOV     #140004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK, CVC=1
8782 050654  012721  045730                        MOV     #T26DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
8783 050660  005021                                CLR     (R1)+                   ;EXTENDED ADDRESS
8784 050662  012721  000012                        MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
8785 050666  012721  045740                        MOV     #T26BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
8786 050672  005021                                CLR     (R1)+
8787 050674  012721  000024                        MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
8788 050700  005021                                CLR     (R1)+
8789 050702  012711  000000                        MOV     #0,(R1)                 ;SELECT DRIVE ZERO (0)
8790 050706  012702  000030                        MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
```

```
 8791 050712  012762  177777  045740  64$:    MOV     #177777,T26BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
 8792 050720  005742                          TST     -(R2)                   ;NEXT LOCATION
 8793 050722  02022?  000000                  CMP     R2,#0                   ;CHECK FOR END OF LOOP
 8794 050726  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
 8795 050730  000207                          RTS     PC                      ;RETURN
 8796
 8797
 8798 050732                          T26RT2:
 8799 050732                                  SAVREG                          ;SAVE THE REGISTERS
 8800 050736  012701  046030                  MOV     #T26PK2,R1              ;START OF THE PACKET
 8801 050742  012721  140006                  MOV     #140006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1,
 8802 050746  012721  046060                  MOV     #T26BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 8803 050752  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 8804 050754  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 8805 050760  005021                          CLR     (R1)+
 8806 050762  012701  046060                  MOV     #T26BF2,R1              ;POINT TO DATA SEL AREA
 8807 050766  005021                          CLR     (R1)+
 8808 050770  005011                          CLR     (R1)
 8809 050772  000207                          RTS     PC                      ;RETURN
 8810 050774                          T26RT3:
 8811 050774                                  SAVREG                          ;SAVE THE REGISTERS
 8812 051000  012701  046050                  MOV     #T26PK3,R1              ;START OF THE PACKET
 8813 051004  012721  000000                  MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK,
 8814 051010  012721  000000                  MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
 8815 051014  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 8816 051016  012711  000000                  MOV     #0,(R1)         ;SIZE OF DATA BLOCK IN BYTES
 8817 051022  000207                          RTS     PC                      ;RETURN
 8818 051024                                  ENDTST
      051024                                                                          L10046:
      051024  104401                                                                          TRAP    C$ETST
```

```
                                        .SBTTL  TEST  3: WRITE DATA RETRY
                                ;+
                                ;
                                ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE DATA RETRY
                                ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 5 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
051026                                  BGNTST
051026                                                                          T3::
051026  005037  002170                  CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
051032  005037  003100                  CLR     KTFLG           ;HOLD OFF KT11
051036  012737  005764  002146          MOV     #EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
051044  005037  003102                  CLR     KTENABLE                ;TURN OFF KT11
051050  004737  020244                  JSR     PC,KTOFF                ;TURN KT11 BACK OFF IF THERE
051054  012700  060623                  MOV     #TST27ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
051060  004737  017406                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
051064  012737  000001  002164          MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
051072  005037  055666                  CLR     T27CNT                  ;CLEAR TAPE RECORD COUNTER
                                ;+
                                ;
                                ;TEST 3, SUBTEST 1
                                ;
                                ;
                                ;VERIFIES THAT A WRITE DATA RETRY COMMAND ISSUED WHILE
                                ;THE TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT
                                ;TERMINATION, WITH THE NON-EXECUTABLE FUNCTION (NEF)
                                ;ERROR BIT SET.
                                ;
                                ;
                                ;-
                                T27LOOP:
051076                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
051076                                                                          T3.1:
051076  104402                                                                  TRAP    C$BSUB
051100  004737  060644                  JSR     PC,T27REST              ;SET COMMAND PACKET
051104  004737  060736                  JSR     PC,T27RT2               ;SET UP OTHER COMMAND PACKET
051110  004737  061000                  JSR     PC,T27RT3               ;SET UP OTHER COMMAND PACKET
051114  012737  176750  055672          MOV     #65000.,T27DLY          ;SET UP DELAY COUNTER
051122  005037  055666                  CLR     T27CNT                  ;CLEAR COUNTER
                                ;
                                ;*****************************************************************
                                ;
                                ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                ;
                                ;*****************************************************************
                                ;
051126  004737  016644          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
051132  103426                          BCS     20$                     ;BR IF INIT WAS OK
051134                                  DELAY   250                     ;DELAY ABOUT .25 SEC
051134  012727  000250                                                          MOV     #250,(PC)+
051140  000000                                                                  .WORD   0
```

```
                051142  013727  002116                                                  MOV     L$DLY,(PC)+
                051146  000000                                                          .WORD   0
                051150  005367  177772                                                  DEC     -6(PC)
                051154  001375                                                          BNE     .-4
                051156  005367  177756                                                  DEC     -22(PC)
                051162  001367                                                          BNE     .-20
  8876          051164  005337  055672          DEC     T27DLY                  ;BUMP COUNTER
  8877          051170  001356                  BNE     10$                     ;BR, IF COUNTER NOT DONE
  8878          051172  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  8882          051176  010001                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
  8883          051200                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                051200  104455                                                          TRAP    C$ERDF
                051202  000455                                                          .WORD   301
                051204  003550                                                          .WORD   SFIERR
                051206  011666                                                          .WORD   SFIMSG
  8884          051210                  20$:
  8885          051210  012704  055510          MOV     #T27PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
  8887                                  ;*****************************************************************
  8888                                  ;
  8889                                  ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
  8890                                  ;
  8891                                  ;*****************************************************************
  8893          051214  004737  010332          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
  8894          051220  103407                  BCS     25$                     ;BR, IF COMMAND ISSUED OK
  8895          051222  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  8899          051226  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
  8900          051230                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                051230  104456                                                          TRAP    C$ERHRD
                051232  000456                                                          .WORD   302
                051234  004754                                                          .WORD   WRTMSG
                051236  011666                                                          .WORD   SFIMSG
  8901          051240                  25$:    CKLOOP                          ;LOOP IF SELECTED
                051240  104406                                                          TRAP    C$CLP1
  8902
  8903                                  ;*****************************************************************
  8904                                  ;
  8905                                  ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
  8906                                  ;
  8907                                  ;*****************************************************************
  8908
  8909          051242  004737  010434          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  8910          051246  103407                  BCS     30$                     ;BR, IF NO PROBLEM
  8911          051250  010004                  MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
  8912          051252  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  8916          051256                          ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
                051256  104456                                                          TRAP    C$ERHRD
                051260  000457                                                          .WORD   303
                051262  057045                                                          .WORD   T27RWN
                051264  011700                                                          .WORD   PKTSSR
  8917          051266                  30$:    CKLOOP                          ;LOOP IF SELECTED
                051266  104406                                                          TRAP    C$CLP1
  8918                                  ;*****************************************************************
  8919                                  ;
  8920                                  ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
  8921                                  ;
  8922                                  ;*****************************************************************
```

```
8923 051270  013701  055536              MOV     T27BFR+6,R1             ;PICK UP XSTO
8924 051274  010102                      MOV     R1,R2                   ;SET UP EXPECTED
8925 051276  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
8926 051302  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
8927 051304  001406                      BEQ     40$                     ;BR, IF EQUAL (OK)
8928 051306  004737  020100              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8932 051312                              ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     051312  104456                                                              TRAP    C$ERHRD
     051314  000460                                                              .WORD   304
     051316  056541                                                              .WORD   T27BOT
     051320  016344                                                              .WORD   EXPREC
8933 051322                      40$:    CKLOOP                          ;LOOP IF SELECTED
     051322  104406                                                              TRAP    C$CLP1
8934 051324  012737  000400  055646              MOV     #256.,T27SZ             ;SET UP RECORD SIZE
8935 051332  013737  003072  055642              MOV     FREE,T27WB              ;ADDRESS OF WRITE BUFFER
8936                             ;*****************************************************************
8938                             ;WRITE DATA RETRY,ACK,CVC=1 COMMAND
8940                             ;*****************************************************************
8941 051340  012737  141005  055640              MOV     #141005,T27PK3          ;WRITE DATA RETRY,ACK,CVC=1 COMMAND
8942 051346  012704  055640                      MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8943 051352  010465  177776                      MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8944 051356  004737  017120                      JSR     PC,WAITF                ;WAIT FOR SSR TO SET
8945 051362  016501  000000                      MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8946 051366  012702  100206                      MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
8947 051372  020102                              CMP     R1,R2                   ;ARE THEY EQUAL
8948 051374  001406                              BEQ     75$                     ;BR, IF OK
8949 051376  004737  020100                      JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8953 051402                                      ERRHRD  ERRNO,T27WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     051402  104456                                                              TRAP    C$ERHRD
     051404  000461                                                              .WORD   305
     051406  056452                                                              .WORD   T27WDE
     051410  011700                                                              .WORD   PKTSSR
8954 051412                      75$:    CKLOOP                          ;LOOP IF SELECTED
     051412  104406                                                              TRAP    C$CLP1
8955                             ;*****************************************************************
8957                             ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
8959                             ;*****************************************************************
8960 051414  013701  055536              MOV     T27BFR+6,R1             ;GET XSTO STATUS WORD
8961 051420  010102                      MOV     R1,R2                   ;SET UP EXPECTED
8962 051422  052702  002000              BIS     #BIT10,R2               ;SET THE NEF BIT
8963 051426  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
8964 051430  001406                      BEQ     170$                    ;BR, IF EQUAL (GOOD)
8965 051432  004737  020100              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8969 051436                              ERRHRD  ERRNO,T27NEF,EXPREC     ;NEF SHOULD BE SET
     051436  104456                                                              TRAP    C$ERHRD
     051440  000462                                                              .WORD   306
     051442  060211                                                              .WORD   T27NEF
     051444  016344                                                              .WORD   EXPREC
8970 051446                      170$:   ENDSUB                                          L10067:
     051446                                                                                  
     051446  104403                                                              TRAP    C$ESUB
8971 051450  023727  002170  000031              CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
8972 051456  002402                              BLT     999$                    ;BR, IF LESS THAN 25
8973 051460  004737  020152                      JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
8974 051464                      999$:
```

```
 8976                                   ;+
 8977                                   ;
 8978                                   ;TEST 3, SUBTEST 2
 8979                                   ;
 8980                                   ;VERIFIES THAT WRITE DATA RETRY COMMAND ISSUED WHILE
 8981                                   ;THE TAPE IS POSITIONED BEFORE THE FIRST RECORD ON
 8982                                   ;TAPE (BUT NOT AT BOT) RESULTS IN TAPE STATUS ALERT
 8983                                   ;TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS
 8984                                   ;ERROR BIT SET.
 8985                                   ;
 8986                                   ;
 8987                                   ;
 8988                                   ;-
 8989 051464                                   BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      051464                                                                                    T3.2:
      051464  104402                                                                             TRAP    C$BSUB
 8990 051466  004737  060644                   JSR     PC,T27REST              ;SET COMMAND PACKET
 8991 051472  004737  060736                   JSR     PC,T27RT2               ;SET UP OTHER COMMAND PACKET
 8992 051476  004737  061000                   JSR     PC,T27RT3               ;SET UP OTHER COMMAND PACKET
 8993
 8994                                   ;*****************************************************************
 8995                                   ;
 8996                                   ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
 8997                                   ;
 8998                                   ;*****************************************************************
 8999
 9000 051502  004737  016644                   JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 9001 051506  103407                           BCS     20$                     ;BR IF INIT WAS OK
 9002 051510  004737  020100                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9006 051514  010001                           MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 9007 051516                                   ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      051516  104455                                                                            TRAP    C$ERDF
      051520  000463                                                                           .WORD   307
      051522  003550                                                                           .WORD   SFIERR
      051524  011666                                                                           .WORD   SFIMSG
 9008 051526                            20$:
 9009 051526  012704  055510                   MOV     #T27PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9010
 9011                                   ;*****************************************************************
 9012                                   ;
 9013                                   ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 9014                                   ;
 9015                                   ;*****************************************************************
 9016
 9017 051532  004737  010332                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9018 051536  103407                           BCS     25$                     ;BR, IF COMMAND ISSUED OK
 9019 051540  004737  020100                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9023 051544  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9024 051546                                   ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      051546  104456                                                                            TRAP    C$ERHRD
      051550  000464                                                                           .WORD   308
      051552  004754                                                                           .WORD   WRTMSG
      051554  011666                                                                           .WORD   SFIMSG
 9025 051556                            25$:    CKLOOP                          ;LOOP IF SELECTED
      051556  104406                                                                            TRAP    C$CLP1
 9026
 9027                                   ;*****************************************************************
```

```
9028                                    ;
9029                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
9030                                    ;
9031                                    ;*****************************************************************
9032
9033 051560  004737  010434            JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
9034 051564  103411                    BCS     26$                     ;BR, IF NO PROBLEM
9035 051566  010004                    MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
9036 051570  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
9037 051574  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
9041 051600                            ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
     051600  104456                                                            TRAP    C$ERHRD
     051602  000465                                                            .WORD   309
     051604  057045                                                            .WORD   T27RWN
     051606  011700                                                            .WORD   PKTSSR
9042 051610                            26$:    CKLOOP                  ;LOOP IF SELECTED
     051610  104406                                                            TRAP    C$CLP1
9043 051612  012703  000400            MOV     #256.,R3                        ;STARTING RECORD SIZE
9044 051616  013737  003072  055642    MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
9045
9046                                    ;*****************************************************************
9047                                    ;
9048                                    ;WRITE DATA,CVC=1,ACK COMMAND
9049                                    ;
9050                                    ;*****************************************************************
9051
9052 051624  012737  140005  055640    MOV     #140005,T27PK3          ;WRITE DATA,CVC=1,ACK COMMAND
9053 051632  012704  055640            MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
9054 051636  010337  055646            MOV     R3,T27SZ                ;SET UP RECORD SIZE IN PACKET
9055 051642  010465  177776            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
9056 051646  004737  017120            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
9057 051652  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
9058 051656  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED
9059 051662  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
9060 051664  001406                    BEQ     28$                     ;BR, IF OK
9061 051666  004737  020100            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
9065                                                                    ;SOFT ERROR GENERATED BECAUSE THE
9066                                                                    ;WRITE COMMAND IS NOT BEING CHECKED
9067                                                                    ;HERE. IT WAS CHECKED IN CZTUXA
9068 051672                            ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     051672  104457                                                            TRAP    C$ERSOFT
     051674  000466                                                            .WORD   310
     051676  005011                                                            .WORD   WRTERR
     051700  011700                                                            .WORD   PKTSSR
9069 051702                            28$:    CKLOOP                  ;LOOP IF SELECTED
     051702  104406                                                            TRAP    C$CLP1
9070
9071                                    ;*****************************************************************
9072                                    ;
9073                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
9074                                    ;
9075                                    ;*****************************************************************
9076
9077 051704  004737  010434            JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
9078 051710  103411                    BCS     30$                     ;BR, IF NO PROBLEM
9079 051712  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
9080 051716  010004                    MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
```

```
 9081 051720  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9085 051724                                ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
      051724  104456                                                        TRAP    C$ERHRD
      051726  000467                                                        .WORD   311
      051730  057045                                                        .WORD   T27RWN
      051732  011700                                                        .WORD   PKTSSR
 9086 051734                        30$:    CKLOOP                          ;LOOP IF SELECTED
      051734  104406                                                        TRAP    C$CLP1
 9087
 9088                               ;*****************************************************************
 9089                               ;
 9090                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 9091                               ;
 9092                               ;*****************************************************************
 9093
 9094 051736  013701  055536                MOV     T27BFR+6,R1             ;PICK UP XST0
 9095 051742  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9096 051744  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9097 051750  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 9098 051752  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 9099 051754  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9103 051760                                ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      051760  104456                                                        TRAP    C$ERHRD
      051762  000470                                                        .WORD   312
      051764  056541                                                        .WORD   T27BOT
      051766  016344                                                        .WORD   EXPREC
 9104 051770                        40$:    CKLOOP                          ;LOOP IF SELECTED
      051770  104406                                                        TRAP    C$CLP1
 9105
 9106                               ;*****************************************************************
 9107                               ;
 9108                               ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 9109                               ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 9110                               ;
 9111                               ;*****************************************************************
 9112
 9113 051772  012703  000001                MOV     #1,R3                   ;PARAMETER SPACE FORWARD 1 RECORD
 9114 051776  004737  010140                JSR     PC,SPACE                ;CALL SPACE RECORDS ROUTINE
 9115 052002  103413                        BCS     50$                     ;BR, IF NO ERRORS
 9116 052004  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9117 052010  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 9118 052014  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 9119 052016  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9123 052022                                ERRHRD  ERRNO,T27SCF,PKTSSR     ;SPACE RECORDS COMMAND FAILED
      052022  104456                                                        TRAP    C$ERHRD
      052024  000471                                                        .WORD   313
      052026  060307                                                        .WORD   T27SCF
      052030  011700                                                        .WORD   PKTSSR
 9124 052032                        50$:    CKLOOP                          ;LOOP IF SELECTED
      052032  104406                                                        TRAP    C$CLP1
 9125
 9126                               ;*****************************************************************
 9127                               ;
 9128                               ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 9129                               ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 9130                               ;
 9131                               ;*****************************************************************
```

```
 9133 052034  012703  100001                MOV     #100001,R3              ;PARAMETER SPACE REVERSE 1 RECORD
 9134 052040  004737  010140                JSR     PC,SPACE                ;CALL SPACE RECORDS ROUTINE
 9135 052044  103413                        BCS     60$                     ;BR, IF NO ERRORS
 9136 052046  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9137 052052  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 9138 052056  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 9139 052060  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9143 052064                                ERRHRD  ERRNO,T27SCF,PKTSSR     ;SPACE RECORDS COMMAND FAILED
      052064  104456                                                        TRAP    C$ERHRD
      052066  000472                                                        .WORD   314
      052070  060307                                                        .WORD   T27SCF
      052072  011700                                                        .WORD   PKTSSR
 9144 052074                        60$:    CKLOOP                          ;LOOP IF SELECTED
      052074  104406                                                        TRAP    C$CLP1
 9145 052076  013737  003072  055642        MOV     FREE,T27RB              ;ADDRESS OF BUFFER
 9147                               ;*****************************************************************
 9148                               ;
 9149                               ;WRITE DATA RETRY,ACK,CVC=1 COMMAND
 9150                               ;
 9151                               ;*****************************************************************
 9153 052104  012737  141005  055640        MOV     #141005,T27PK3          ;WRITE DATA RETRY,ACK,CVC=1 COMMAND
 9154 052112  012737  000400  055646        MOV     #256.,T27SZ             ;SET UP THE SIZE OF RECORD
 9155 052120  012704  055640                MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9156 052124  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9157 052130  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9158 052134  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9159 052140  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED TAPE STATUS ALERT
 9160 052144  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 9161 052146  001406                        BEQ     180$                    ;BR, IF OK
 9162 052150  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9166 052154                                ERRHRD  ERRNO,T27TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      052154  104456                                                        TRAP    C$ERHRD
      052156  000473                                                        .WORD   315
      052160  060364                                                        .WORD   T27TSA
      052162  011700                                                        .WORD   PKTSSR
 9167 052164                        180$:   CKLOOP                          ;LOOP IF SELECTED
      052164  104406                                                        TRAP    C$CLP1
 9168 052166  013701  055544                MOV     T27BFR+14,R1            ;GET XST3 STATUS WORD
 9169 052172  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9170 052174  052702  000001                BIS     #BIT0,R2                ;SET THE RIB BIT
 9171 052200  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 9172 052202  001406                        BEQ     190$                    ;BR, IF EQUAL (GOOD)
 9173 052204  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9177 052210                                ERRHRD  ERRNO,T27NEF,EXPREC     ;NEF SHOULD BE SET
      052210  104456                                                        TRAP    C$ERHRD
      052212  000474                                                        .WORD   316
      052214  060211                                                        .WORD   T27NEF
      052216  016344                                                        .WORD   EXPREC
 9178 052220                        190$:
 9179 052220                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      052220                                                                    L10070:
      052220  104403                                                        TRAP    C$ESUB
 9180 052222  023727  002170  000031            CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 9181 052230  002402                            BLT     999$                    ;BR, IF LESS THAN 25
 9182 052232  004737  020152                    JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 9183 052236                        999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 3, SUBTEST 3
                                        ;
                                        ;VERIFIES THAT A WRITE DATA RETRY COMMAND WITH SWB=0
                                        ;TERMINATES PROPERLY AND WRITES CORRECT DATA ON TAPE
                                        ;(THE WRITTEN RECORD IS READ AND CHECKED). VARIOUS
                                        ;BYTE COUNTS AND DATA PATTERNS ARE USED.
                                        ;
                                        ;
                                        ;-
052236                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
052236                                                                                  T3.3:
052236  104402                                                                          TRAP    C$BSUB
052240  004737  060644                    JSR     PC,T27REST              ;SET COMMAND PACKET
052244  004737  060736                    JSR     PC,T27RT2               ;SET UP OTHER COMMAND PACKET
052250  004737  061000                    JSR     PC,T27RT3               ;SET UP OTHER COMMAND PACKET

                                        ;*************************************************************************
                                        ;
                                        ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                        ;
                                        ;*************************************************************************

052254  004737  016644                    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
052260  103407                            BCS     20$                     ;BR IF INIT WAS OK
052262  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
052266  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
052270                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
052270  104455                                                                    TRAP    C$ERDF
052272  000475                                                                    .WORD   317
052274  003550                                                                    .WORD   SFIERR
052276  011666                                                                    .WORD   SFIMSG
052300                                  20$:
052300  012704  055510                    MOV     #T27PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

                                        ;*************************************************************************
                                        ;
                                        ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                        ;
                                        ;*************************************************************************

052304  004737  010332                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
052310  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
052312  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
052316  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
052320                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
052320  104456                                                                    TRAP    C$ERHRD
052322  000476                                                                    .WORD   318
052324  004754                                                                    .WORD   WRTMSG
052326  011666                                                                    .WORD   SFIMSG
052330                                  23$:    CKLOOP                          ;LOOP IF SELECTED
052330  104406                                                                    TRAP    C$CLP1

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

```
 9237                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 9238                                   ;
 9239                                   ;*************************************************************
 9240
 9241 052332  004737  010434                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9242 052336  103407                            BCS     30$                     ;BR, IF NO PROBLEM
 9243 052340  010004                            MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 9244 052342  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9248 052346                                    ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
      052346  104456                                                            TRAP    C$ERHRD
      052350  000477                                                            .WORD   319
      052352  057045                                                            .WORD   T27RWN
      052354  011700                                                            .WORD   PKTSSR
 9249 052356                            30$:    CKLOOP                          ;LOOP IF SELECTED
      052356  104406                                                            TRAP    C$CLP1
 9250
 9251                                   ;*************************************************************
 9252                                   ;
 9253                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 9254                                   ;
 9255                                   ;*************************************************************
 9256
 9257 052360  013701  055536                    MOV     T27BFR+6,R1             ;PICK UP XST0
 9258 052364  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 9259 052366  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9260 052372  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
 9261 052374  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
 9262 052376  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9266 052402                                    ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      052402  104456                                                            TRAP    C$ERHRD
      052404  000500                                                            .WORD   320
      052406  056541                                                            .WORD   T27BOT
      052410  016344                                                            .WORD   EXPREC
 9267 052412                            40$:    CKLOOP                          ;LOOP IF SELECTED
      052412  104406                                                            TRAP    C$CLP1
 9268 052414  012703  000024                    MOV     #20.,R3                 ;STARTING RECORD SIZE
 9269 052420  013737  003072  055642            MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
 9270
 9271                                   ;*************************************************************
 9272                                   ;
 9273                                   ;WRITE DATA,CVC=1,ACK COMMAND
 9274                                   ;
 9275                                   ;*************************************************************
 9276
 9277 052426  012737  140005  055640    65$:    MOV     #140005,T27PK3          ;WRITE DATA,CVC=1,ACK COMMAND
 9278 052434  012704  055640                    MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9279 052440  010300                            MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
 9280 052442  004737  020372                    JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 9281 052446  010337  055646                    MOV     R3,T27SZ                ;SET UP RECORD SIZE IN PACKET
 9282 052452  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9283 052456  004737  017120                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9284 052462  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9285 052466  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 9286 052472  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 9287 052474  001406                            BEQ     80$                     ;BR, IF OK
 9288 052476  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9292                                                                           ;SOFT ERROR GENERATED BECAUSE THE
```

```
                                                                ;WRITE COMMAND IS NOT BEING CHECKED
                                                                ;HERE. IT WAS CHECKED IN CZTUXA
                        ERRSOFT ERRNO,WRTERR,PKTSSR             ;TSSR INCORRECT AFTER WRITE DATA
052502  104457                                                                   TRAP    C$ERSOFT
052504  000501                                                                   .WORD   321
052506  005011                                                                   .WORD   WRTERR
052510  011700                                                                   .WORD   PKTSSR
052512                  80$:    CKLOOP                          ;LOOP IF SELECTED
052512  104406                                                                   TRAP    C$CLP1

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

052514  012737  141005  055640          MOV     #141005,T27PK3          ;WRITE DATA RETRY,CVC=1,ACK COMMAND
052522  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
052526  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
052532  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
052536  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
052542  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
052544  001406                          BEQ     90$                     ;BR, IF OK
052546  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
052552                          ERRHRD  ERRNO,T27WRF,PKTSSR             ;TSSR INCORRECT AFTER WRITE DATA RETRY
052552  104456                                                                   TRAP    C$ERHRD
052554  000502                                                                   .WORD   322
052556  060446                                                                   .WORD   T27WRF
052560  011700                                                                   .WORD   PKTSSR
052562                  90$:    CKLOOP                          ;LOOP IF SELECTED
052562  104406                                                                   TRAP    C$CLP1
052564  005723                  TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
052566  020327  000050          CMP     R3,#40.                 ;AT 40 SIZE YET
052572  001315                  BNE     65$                     ;BR, IF MORE RECORDS TO WRITE

                        ;*************************************************************************
                        ;
                        ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                        ;
                        ;*************************************************************************

052574  004737  010434          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
052600  103407                  BCS     230$                    ;BR, IF NO PROBLEM
052602  010001                  MOV     R0,R1                   ;SAVE TSSR
052604  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
052610                          ERRHRD  ERRNO,T27RWN,EXPREC     ;REWIND NOT ACCEPTED
052610  104456                                                                   TRAP    C$ERHRD
052612  000503                                                                   .WORD   323
052614  057045                                                                   .WORD   T27RWN
052616  016344                                                                   .WORD   EXPREC
052620                  230$:   CKLOOP                          ;LOOP IF SELECTED
052620  104406                                                                   TRAP    C$CLP1

                        ;*************************************************************************
                        ;
                        ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
                        ;
```

```
 9341                                   ;*****************************************************************
 9342
 9343 052622  013701  055536                    MOV     T27BFR+6,R1             ;PICK UP XSTO
 9344 052626  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 9345 052630  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9346 052634  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
 9347 052636  001406                            BEQ     240$                    ;BR, IF EQUAL (OK)
 9348 052640  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9352 052644                                    ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      052644  104456                                                                    TRAP    C$ERHRD
      052646  000504                                                                    .WORD   324
      052650  056541                                                                    .WORD   T27BOT
      052652  016344                                                                    .WORD   EXPREC
 9353 052654                            240$:   CKLOOP                          ;LOOP IF SELECTED
      052654  104406                                                                    TRAP    C$CLP1
 9354 052656  012703  000024                    MOV     #20.,R3                 ;STARTING RECORD SIZE
 9355 052662  013737  003072  055642            MOV     FREE,T27RB              ;STARTING READ BUFFER ADDRESS
 9356
 9357                                   ;*****************************************************************
 9358                                   ;
 9359                                   ;READ DATA,ACK COMMAND
 9360                                   ;
 9361                                   ;*****************************************************************
 9362
 9363 052670  012737  100001  055640  265$:   MOV     #100001,T27PK3          ;READ DATA,ACK COMMAND
 9364 052676  012704  055640                    MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9365 052702  010337  055646                    MOV     R3,T27SZ                ;SET UP RECORD SIZE IN PACKET
 9366 052706  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9367 052712  004737  017120                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9368 052716  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9369 052722  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 9370 052726  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 9371 052730  001406                            BEQ     280$                    ;BR, IF OK
 9372 052732  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9376 052736                                    ERRHRD  ERRNO,RDERR,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
      052736  104456                                                                    TRAP    C$ERHRD
      052740  000505                                                                    .WORD   325
      052742  005104                                                                    .WORD   RDERR
      052744  011700                                                                    .WORD   PKTSSR
 9377 052746                            280$:   CKLOOP                          ;LOOP IF SELECTED
      052746  104406                                                                    TRAP    C$CLP1
 9378 052750  013702  003072                    MOV     FREE,R2                 ;GET BUFFER ADDRESS
 9379 052754  010304                            MOV     R3,R4                   ;GET RECORD SIZE
 9380 052756  162704  000024                    SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
 9381 052762  060204                    285$:   ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
 9382 052764  021403                            CMP     (R4),R3                 ;DATA WRITTEN = READ
 9383 052766  001410                            BEQ     290$                    ;BR, IF DATA OK (GOOD)
 9384 052770  011401                            MOV     (R4),R1                 ;PICK UP BAD DATA
 9385 052772  010302                            MOV     R3,R2                   ;SET UP EXPECTED
 9386 052774  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9390 053000                                    ERRHRD  ERRNO,T27DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
      053000  104456                                                                    TRAP    C$ERHRD
      053002  000506                                                                    .WORD   326
      053004  060526                                                                    .WORD   T27DTA
      053006  016344                                                                    .WORD   EXPREC
 9391 053010                            290$:   CKLOOP                          ;LOOP IF SELECTED
      053010  104406                                                                    TRAP    C$CLP1
```

```
 9392 053012  005724                          TST     (R4)+           ;BUMP TO NEXT ADDRESS
 9393 053014  160204                          SUB     R2,R4           ;BACK TO RECORD SIZE
 9394 053016  020403                          CMP     R4,R3           ;AT END OF RECORD YET
 9395 053020  001360                          BNE     285$            ;BR, IF MORE DATA TO CHECK
 9396 053022  005723                          TST     (R3)+           ;BUMP RECORD SIZE
 9397 053024  020327  000050                  CMP     R3,#40.         ;DONE YET
 9398 053030  001317                          BNE     265$            ;BR, IF NOT DONE YET (MORE READS)
 9399 053032                          300$:   CKLOOP                  ;LOOP IF SELECTED
      053032  104406                                                          TRAP    C$CLP1
 9400 053034                          330$:
 9401 053034                          ENDSUB                  ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      053034                                                              L10071:
      053034  104403                                                          TRAP    C$ESUB
 9402 053036  023727  002170  000031          CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 9403 053044  002402                          BLT     999$                    ;BR, IF LESS THAN 25
 9404 053046  004737  020152                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 9405 053052                          999$:
```

```
 9407                                   ;+
 9408                                   ;
 9409                                   ;TEST 3, SUBTEST 4
 9410                                   ;
 9411                                   ;VERIFIES THAT A WRITE DATA RETRY COMMAND WITH SWB=1
 9412                                   ;TERMINATES PROPERLY AND WRITES CORRECT DATA ON TAPE
 9413                                   ;(THE WRITTEN RECORD IS READ AND CHECKED). VARIOUS
 9414                                   ;BYTE COUNTS AND DATA PATTERNS ARE USED.
 9415                                   ;
 9416                                   ;
 9417                                   ;
 9418                                   ;-
 9419 053052                                   BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      053052                                                                                T3.4:
      053052  104402                                                                           TRAP    C$BSUB
 9420 053054  004737  060644                   JSR     PC,T27REST              ;SET COMMAND PACKET
 9421 053060  004737  060736                   JSR     PC,T27RT2               ;SET UP OTHER COMMAND PACKET
 9422 053064  004737  061000                   JSR     PC,T27RT3               ;SET UP OTHER COMMAND PACKET
 9423 053070  012737  176750  055672           MOV     #65000.,T27DLY          ;SET UP DELAY COUNTER
 9424
 9425                                   ;*****************************************************************
 9426                                   ;
 9427                                   ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
 9428                                   ;
 9429                                   ;*****************************************************************
 9430
 9431 053076  004737  016644           10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 9432 053102  103426                           BCS     20$                     ;BR IF INIT WAS OK
 9433 053104                                   DELAY   250                     ;DELAY ABOUT .25 SEC
      053104  012727  000250                                                                   MOV     #250,(PC)+
      053110  000000                                                                           .WORD   0
      053112  013727  002116                                                                   MOV     L$DLY,(PC)+
      053116  000000                                                                           .WORD   0
      053120  005367  177772                                                                   DEC     -6(PC)
      053124  001375                                                                           BNE     .-4
      053126  005367  177756                                                                   DEC     -22(PC)
      053132  001367                                                                           BNE     .-20
 9434 053134  005337  055672                   DEC     T27DLY                  ;BUMP COUNTER
 9435 053140  001356                           BNE     10$                     ;BR, IF COUNTER NOT DONE
 9436 053142  004737  020100                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9440 053146  010001                           MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 9441 053150                                   ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      053150  104455                                                                           TRAP    C$ERDF
      053152  000507                                                                           .WORD   327
      053154  003550                                                                           .WORD   SFIERR
      053156  011666                                                                           .WORD   SFIMSG
 9442 053160                           20$:
 9443 053160  012704  055510                   MOV     #T27PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9444
 9445                                   ;*****************************************************************
 9446                                   ;
 9447                                   ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 9448                                   ;
 9449                                   ;*****************************************************************
 9450
 9451 053164  004737  010332                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9452 053170  103407                           BCS     23$                     ;BR, IF COMMAND ISSUED OK
```

```
 9453 053172  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9457 053176  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9458 053200                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      053200  104456                                                        TRAP    C$ERHRD
      053202  000510                                                        .WORD   328
      053204  004754                                                        .WORD   WRTMSG
      053206  011666                                                        .WORD   SFIMSG
 9459 053210                        23$:    CKLOOP                          ;LOOP IF SELECTED
      053210  104406                                                        TRAP    C$CLP1
 9460
 9461                               ;*****************************************************************
 9462                               ;
 9463                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 9464                               ;
 9465                               ;*****************************************************************
 9466
 9467 053212  004737  010434                JSR     PC,REWIND               ;CALL TAPF REWIND COMMAND
 9468 053216  103411                        BCS     30$                     ;BR, IF NO PROBLEM
 9469 053220  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9470 053224  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 9471 053226  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9475 053232                                ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
      053232  104456                                                        TRAP    C$ERHRD
      053234  000511                                                        .WORD   329
      053236  057045                                                        .WORD   T27RWN
      053240  011700                                                        .WORD   PKTSSR
 9476 053242                        30$:    CKLOOP                          ;LOOP IF SELECTED
      053242  104406                                                        TRAP    C$CLP1
 9477
 9478                               ;*****************************************************************
 9479                               ;
 9480                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 9481                               ;
 9482                               ;*****************************************************************
 9483
 9484 053244  013701  055536                MOV     T27BFR+6,R1             ;PICK UP XST0
 9485 053250  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9486 053252  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9487 053256  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 9488 053260  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 9489 053262  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9493 053266                                ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      053266  104456                                                        TRAP    C$ERHRD
      053270  000512                                                        .WORD   330
      053272  056541                                                        .WORD   T27BOT
      053274  016344                                                        .WORD   EXPREC
 9494 053276                        40$:    CKLOOP                          ;LOOP IF SELECTED
      053276  104406                                                        TRAP    C$CLP1
 9495 053300  012703  000024                MOV     #20.,R3                 ;STARTING RECORD SIZE
 9496 053304  013737  003072  055642        MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
 9497
 9498                               ;*****************************************************************
 9499                               ;
 9500                               ;WRITE DATA,CVC=1,ACK COMMAND
 9501                               ;
 9502                               ;*****************************************************************
 9503
```

```
 9504 053312  012737  140005  055640  65$:    MOV     #140005,T27PK3          ;WRITE DATA,CVC=1,ACK COMMAND
 9505 053320  012704  055640              MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9506 053324  010300                      MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
 9507 053326  004737  020372              JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 9508 053332  010337  055646              MOV     R3,T27SZ                ;SET UP RECORD SIZE IN PACKET
 9509 053336  010465  177776              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9510 053342  004737  017120              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9511 053346  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9512 053352  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
 9513 053356  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
 9514 053360  001406                      BEQ     80$                     ;BR, IF OK
 9515 053362  004737  020100              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9519                                                                     ;SOFT ERROR GENERATED BECAUSE THE
 9520                                                                     ;WRITE COMMAND IS NOT BEING CHECKED
 9521                                                                     ;HERE. IT WAS CHECKED IN CZTUXA
 9522 053366                              ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      053366  104457                                                                 TRAP    C$ERSOFT
      053370  000513                                                                 .WORD   331
      053372  005011                                                                 .WORD   WRTERR
      053374  011700                                                                 .WORD   PKTSSR
 9523 053376                      80$:    CKLOOP                          ;LOOP IF SELECTED
      053376  104406                                                                 TRAP    C$CLP1
 9524
 9525                             ;*****************************************************************
 9526                             ;
 9527                             ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
 9528                             ;
 9529                             ;*****************************************************************
 9530
 9531 053400  012737  111005  055640          MOV     #111005,T27PK3          ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
 9532 053406  010465  177776              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9533 053412  004737  017120              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9534 053416  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9535 053422  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
 9536 053426  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
 9537 053430  001406                      BEQ     90$                     ;BR, IF OK
 9538 053432  004737  020100              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9542 053436                              ERRHRD  ERRNO,T27WRF,EXPREC     ;TSSR INCORRECT AFTER WRITE DATA RETRY
      053436  104456                                                                 TRAP    C$ERHRD
      053440  000514                                                                 .WORD   332
      053442  060446                                                                 .WORD   T27WRF
      053444  016344                                                                 .WORD   EXPREC
 9543 053446                      90$:    CKLOOP                          ;LOOP IF SELECTED
      053446  104406                                                                 TRAP    C$CLP1
 9544 053450  005723                      TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
 9545 053452  020327  000050              CMP     R3,#40.                 ;AT 40 SIZE YET
 9546 053456  001315                      BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 9547
 9548                             ;*****************************************************************
 9549                             ;
 9550                             ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 9551                             ;
 9552                             ;*****************************************************************
 9553
 9554 053460  004737  010434              JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9555 053464  103411                      BCS     230$                    ;BR, IF NO PROBLEM
 9556 053466  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
 9557 053472  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 9558 053474  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9562 053500                                ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
      053500  104456                                                        TRAP    C$ERHRD
      053502  000515                                                        .WORD   333
      053504  057045                                                        .WORD   T27RWN
      053506  011700                                                        .WORD   PKTSSR
 9563 053510                        230$:   CKLOOP                          ;LOOP IF SELECTED
      053510  104406                                                        TRAP    C$CLP1
 9564
 9565                               ;*************************************************************************
 9566                               ;
 9567                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 9568                               ;
 9569                               ;*************************************************************************
 9570
 9571 053512  013701  055536                MOV     T27BFR+6,R1             ;PICK UP XST0
 9572 053516  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9573 053520  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9574 053524  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 9575 053526  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
 9576 053530  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9580 053534                                ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      053534  104456                                                        TRAP    C$ERHRD
      053536  000516                                                        .WORD   334
      053540  056541                                                        .WORD   T27BOT
      053542  016344                                                        .WORD   EXPREC
 9581 053544                        240$:   CKLOOP                          ;LOOP IF SELECTED
      053544  104406                                                        TRAP    C$CLP1
 9582 053546  012703  000024                MOV     #20.,R3                 ;STARTING RECORD SIZE
 9583 053552  013737  003072  055642        MOV     FREE,T27RB              ;STARTING READ BUFFER ADDRESS
 9584
 9585                               ;*************************************************************************
 9586                               ;
 9587                               ;READ DATA,ACK COMMAND
 9588                               ;
 9589                               ;*************************************************************************
 9590
 9591 053560  012737  100001  055640  265$:   MOV     #100001,T27PK3          ;READ DATA,ACK COMMAND
 9592 053566  012704  055640                MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9593 053572  010337  055646                MOV     R3,T27SZ                ;SET UP RECORD SIZE IN PACKET
 9594 053576  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9595 053602  004737  017120                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9596 053606  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9597 053612  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 9598 053616  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 9599 053620  001406                        BEQ     280$                    ;BR, IF OK
 9600 053622  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9604 053626                                ERRHRD  ERRNO,RDERR,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
      053626  104456                                                        TRAP    C$ERHRD
      053630  000517                                                        .WORD   335
      053632  005104                                                        .WORD   RDERR
      053634  011700                                                        .WORD   PKTSSR
 9605 053636                        280$:   CKLOOP                          ;LOOP IF SELECTED
      053636  104406                                                        TRAP    C$CLP1
 9606 053640  013702  003072                MOV     FREE,R2                 ;GET BUFFER ADDRESS
 9607 053644  010304                        MOV     R3,R4                   ;GET RECORD SIZE
```

```
 9608 053646  162704  000024            SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
 9609 053652  060204              285$:  ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
 9610 053654  000303                     SWAB    R3                      ;SWAP BYTES SWB=1 ETC.
 9611 053656  021403                     CMP     (R4),R3                 ;DATA WRITTEN = READ
 9612 053660  001410                     BEQ     290$                    ;BR, IF DATA OK (GOOD)
 9613 053662  011401                     MOV     (R4),R1                 ;PICK UP BAD DATA
 9614 053664  010302                     MOV     R3,R2                   ;SET UP EXPECTED
 9615 053666  004737  020100             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9619 053672                             ERRHRD  ERRNO,T27DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
      053672  104456                                                             TRAP    C$ERHRD
      053674  000520                                                             .WORD   336
      053676  060526                                                             .WORD   T27DTA
      053700  016344                                                             .WORD   EXPREC
 9620 053702              290$:  CKLOOP                                  ;LOOP IF SELECTED
      053702  104406                                                             TRAP    C$CLP1
 9621 053704  005724                     TST     (R4)+                   ;BUMP TO NEXT ADDRESS
 9622 053706  160204                     SUB     R2,R4                   ;BACK TO RECORD SIZE
 9623 053710  000303                     SWAB    R3                      ;PUT R3 BACK INTO SHAPE
 9624 053712  020403                     CMP     R4,R3                   ;AT END OF RECORD YET
 9625 053714  001356                     BNE     285$                    ;BR, IF MORE DATA TO CHECK
 9626 053716  005723                     TST     (R3)+                   ;BUMP RECORD SIZE
 9627 053720  020327  000046             CMP     R3,#38.                 ;DONE YET
 9628 053724  001315                     BNE     265$                    ;BR, IF NOT DONE YET (MORE READS)
 9629 053726              300$:  CKLOOP                                  ;LOOP IF SELECTED
      053726  104406                                                             TRAP    C$CLP1
 9630 053730                             ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      053730                                                                 L10072:
      053730  104403                                                             TRAP    C$ESUB
 9631 053732  023727  002170  000031             CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 9632 053740  002402                             BLT     999$                    ;BR, IF LESS THAN 25
 9633 053742  004737  020152                     JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 9634 053746              999$:
```

```
 9636                                   ;+
 9637                                   ;
 9638                                   ;TEST 3, SUBTEST 5
 9639                                   ;
 9640                                   ;VERIFIES THAT A WRITE DATA RETRY COMMAND IS
 9641                                   ;PERFORMING THE "ERASE" PART OF THE OPERATION BY
 9642                                   ;PERFORMING THE FOLLOWING SERIES OF STEPS.
 9643                                   ;
 9644                                   ;1.     THE TAPE IS REWOUND AND A SERIES OF RECORDS ARE
 9645                                   ;       WRITTEN WITH THE NORMAL WRITE DATA COMMAND. THIS
 9646                                   ;       SHOULD RESULT IN RECORDS SEPARATED BY THE
 9647                                   ;       STANDARD INTERRECORD GAP.
 9648                                   ;
 9649                                   ;2.     A PROGRAM TIMING VALUE IS CALIBRATED BY REWINDING
 9650                                   ;       THE TAPE AND THEN CONUTING THE NUMBER OF CYCLES
 9651                                   ;       THROUGH A PROGRAMMED LOOP REQUIRED TO SPACE OVER
 9652                                   ;       THE SERIES OF RECORDS WRITTEN IN PREVIOUS
 9653                                   ;       STEP
 9654                                   ;
 9655                                   ;3.     THE TAPE IS AGAIN REWOUND AND THE SAME SERIES OF
 9656                                   ;       RECORDS WRITTEN AGAIN, THIS TIME USING THE WRITE
 9657                                   ;       DATA RETRY COMMAND. THIS SHOULD RESULT IN
 9658                                   ;       RECORDS SEPARATED BY A LONG INTERRECORD GAP.
 9659                                   ;
 9660                                   ;4.     THE TAPE IS AGAIN REWOUND, THE SPACING COMMAND
 9661                                   ;       ISSUED, AND THE NUMBER OF TIMMING LOOP CYCLES
 9662                                   ;       COUNTED TO COMPLETE THE OPERATION.
 9663                                   ;
 9664                                   ;5.     THE TWO LOOP COUNTS ARE COMPARED, CHECKING TO SEE
 9665                                   ;       THAT THEY DIFFER BY A SIGNIFICANT AMOUNT.
 9666                                   ;
 9667                                   ;
 9668                                   ;
 9669                                   ;
 9670                                   ;
 9671                                   ;-
 9672 053746                           BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      053746                                                                  T3.5:
      053746  104402                                                                  TRAP    C$BSUB
 9673 053750  005037  002172           CLR     INTRECV         ;INTERRUPT INDICATOR
 9674 053754  005037  055666           CLR     T27CNT          ;TIMER FOR WRITE DATA SPACING
 9675 053760  005037  055670           CLR     T27CNU          ;TIMER FOR WRITE DATA RETRY SPACING
 9676 053764  004737  060644           JSR     PC,T27REST      ;SET COMMAND PACKET
 9677 053770  004737  060736           JSR     PC,T27RT2       ;SET UP OTHER COMMAND PACKET
 9678 053774  004737  061000           JSR     PC,T27RT3       ;SET UP OTHER COMMAND PACKET
 9679 054000  012737  176750  055672   MOV     #65000.,T27DLY  ;SET UP DELAY COUNTER
 9680
 9681                                   ;*****************************************************************
 9682                                   ;
 9683                                   ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
 9684                                   ;
 9685                                   ;*****************************************************************
 9686
 9687 054006  004737  016644           10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
 9688 054012  103426                   BCS     20$             ;BR IF INIT WAS OK
 9689 054014                           DELAY   250             ;DELAY ABOUT .25 SEC
      054014  012727  000250                                                  MOV     #250,(PC)+
```

```
                054020  000C00                                                          .WORD   0
                054022  013727  002116                                                  MOV     L$DLY,(PC)+
                054026  000000                                                          .WORD   0
                054030  005367  177772                                                  DEC     -6(PC)
                054034  001375                                                          BNE     .-4
                054036  005367  177756                                                  DEC     -22(PC)
                054042  001367                                                          BNE     .-20
 9690           054044  005337  055672          DEC     T27DLY          ;BUMP COUNTER
 9691           054050  001356                  BNE     10$             ;BR, IF COUNTER NOT DONE
 9692           054052  004737  020100          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9696           054056  010001                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
 9697           054060                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                054060  104455                                                          TRAP    C$ERDF
                054062  000521                                                          .WORD   337
                054064  003550                                                          .WORD   SFIERR
                054066  011666                                                          .WORD   SFIMSG
 9698           054070                  20$:
 9699
 9700           054070  012704  055510          MOV     #T27PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
 9701
 9702                                   ;*****************************************************************
 9703                                   ;
 9704                                   ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 9705                                   ;
 9706                                   ;*****************************************************************
 9707
 9708           054074  004737  010332          JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
 9709           054100  103407                  BCS     23$             ;BR, IF COMMAND ISSUED OK
 9710           054102  004737  020100          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9714           054106  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
 9715           054110                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                054110  104456                                                          TRAP    C$ERHRD
                054112  000522                                                          .WORD   338
                054114  004754                                                          .WORD   WRTMSG
                054116  011666                                                          .WORD   SFIMSG
 9716           054120                  23$:    CKLOOP                  ;LOOP IF SELECTED
                054120  104406                                                          TRAP    C$CLP1
 9717
 9718                                   ;*****************************************************************
 9719                                   ;
 9720                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 9721                                   ;
 9722                                   ;*****************************************************************
 9723
 9724           054122  004737  010434          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
 9725           054126  103411                  BCS     30$             ;BR, IF NO PROBLEM
 9726           054130  016501  000000          MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
 9727           054134  010004                  MOV     R0,R4           ;GET PACKET ADDRESS
 9728           054136  004737  020100          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9732           054142                          ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
                054142  104456                                                          TRAP    C$ERHRD
                054144  000523                                                          .WORD   339
                054146  057045                                                          .WORD   T27RWN
                054150  011700                                                          .WORD   PKTSSR
 9733           054152                  30$:    CKLOOP                  ;LOOP IF SELECTED
                054152  104406                                                          TRAP    C$CLP1
 9734
```

```
 9735                                   ;*************************************************************************
 9736                                   ;
 9737                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 9738                                   ;
 9739                                   ;*************************************************************************
 9740
 9741 054154  013701  055536                    MOV     T27BFR+6,R1             ;PICK UP XST0
 9742 054160  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 9743 054162  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9744 054166  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
 9745 054170  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
 9746 054172  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9750 054176                                    ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      054176  104456                                                            TRAP    C$ERHRD
      054200  000524                                                            .WORD   340
      054202  056541                                                            .WORD   T27BOT
      054204  016344                                                            .WORD   EXPREC
 9751 054206                            40$:    CKLOOP                          ;LOOP IF SELECTED
      054206  104406                                                            TRAP    C$CLP1
 9752 054210  012703  000144                    MOV     #100.,R3                ;NUMBER OF RECORDS TO BE WRITTEN
 9753 054214  013737  003072  055642            MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
 9754
 9755                                   ;*************************************************************************
 9756                                   ;
 9757                                   ;WRITE DATA,ACK,CVC=1 COMMAND
 9758                                   ;
 9759                                   ;*************************************************************************
 9760
 9761 054222  012737  140005  055640    65$:    MOV     #140005,T27PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 9762 054230  012704  055640                    MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9763 054234  012737  000024  055646            MOV     #20.,T27SZ              ;SET UP RECORD SIZE IN PACKET
 9764 054242  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9765 054246  004737  017120                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9766 054252  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9767 054256  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 9768 054262  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 9769 054264  001406                            BEQ     70$                     ;BR, IF OK
 9770 054266  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9774                                                                           ;SOFT ERROR GENERATED BECAUSE THE
 9775                                                                           ;WRITE COMMAND IS NOT BEING CHECKED
 9776                                                                           ;HERE. IT WAS CHECKED IN CZTUXA
 9777 054272                                    ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      054272  104457                                                            TRAP    C$ERSOFT
      054274  000525                                                            .WORD   341
      054276  005011                                                            .WORD   WRTERR
      054300  011700                                                            .WORD   PKTSSR
 9778 054302                            70$:    CKLOOP                          ;LOOP IF SELECTED
      054302  104406                                                            TRAP    C$CLP1
 9779 054304  005303                            DEC     R3                      ;DEC RECORD COUNTER
 9780 054306  001345                            BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 9781
 9782                                   ;*************************************************************************
 9783                                   ;
 9784                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 9785                                   ;
 9786                                   ;*************************************************************************
 9787
```

```
 9788 054310  004737  010434                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9789 054314  103411                        BCS     130$                    ;BR, IF NO PROBLEM
 9790 054316  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9791 054322  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 9792 054324  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9796 054330                                ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
      054330  104456                                                        TRAP    C$ERHRD
      054332  000526                                                        .WORD   342
      054334  057045                                                        .WORD   T27RWN
      054336  011700                                                        .WORD   PKTSSR
 9797 054340                        130$:   CKLOOP                          ;LOOP IF SELECTED
      054340  104406                                                        TRAP    C$CLP1
 9798
 9799                                ;*****************************************************************
 9800                                ;
 9801                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 9802                                ;
 9803                                ;*****************************************************************
 9804
 9805 054342  013701  055536                MOV     T27BFR+6,R1             ;PICK UP XST0
 9806 054346  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9807 054350  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9808 054354  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 9809 054356  001406                        BEQ     140$                    ;BR, IF EQUAL (OK)
 9810 054360  004737  020100                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9814 054364                                ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      054364  104456                                                        TRAP    C$ERHRD
      054366  000527                                                        .WORD   343
      054370  056541                                                        .WORD   T27BOT
      054372  016344                                                        .WORD   EXPREC
 9815 054374                        140$:   CKLOOP                          ;LOOP IF SELECTED
      054374  104406                                                        TRAP    C$CLP1
 9816 054376  012704  055640                MOV     #T27PK3,R4              ;SET UP PACKET ADDRESS
 9817 054402  012737  000010  055642        MOV     #10,T27RB               ;SET UP RECORDS TO SPACE OVER
 9818
 9819                                ;*****************************************************************
 9820                                ;
 9821                                ;ACK,CVC=1,SPACE FORWARD COMMAND
 9822                                ;
 9823                                ;*****************************************************************
 9824
 9825 054410  012737  140010  055640        MOV     #140010,T27PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
 9826 054416  010465  177776        150$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9827 054422  005237  055666        152$:   INC     T27CNT                  ;BUMP TIMER
 9828 054426                                DELAY   1                       ;DELAY ABOUT 100US
      054426  012727  000001                                                MOV     #1,(PC)+
      054432  000000                                                        .WORD   0
      054434  013727  002116                                                MOV     L$DLY,(PC)+
      054440  000000                                                        .WORD   0
      054442  005367  177772                                                DEC     -6(PC)
      054446  001375                                                        BNE     .-4
      054450  005367  177756                                                DEC     -22(PC)
      054454  001367                                                        BNE     .-20
 9829 054456  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
 9830 054462  032701  000200                BIT     #BIT7,R1                ;CHECK FOR TSSR'S SSR SET
 9831 054466  001755                        BEQ     152$                    ;KEEP COUNTING UNTIL SET
 9832 054470  016501  000000                MOV     TSSR(R5),R1             ;GET STATUS FROM TSSR
```

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 9833 054474  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 9834 054500  020201                            CMP     R2,R1                   ;WAS EVERYTHING OK
 9835 054502  001406                            BEQ     160$                    ;BR, IF ALL IS WELL
 9836 054504  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9840 054510                                    ERRHRD  ERRNO,T27SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
      054510  104456                                                                    TRAP    C$ERHRD
      054512  000530                                                                    .WORD   344
      054514  060307                                                                    .WORD   T27SCF
      054516  011700                                                                    .WORD   PKTSSR
 9841 054520                            160$:   CKLOOP                          ;LOOP IF SELECTED
      054520  104406                                                                    TRAP    C$CLP1
 9842
 9843                                   ;*************************************************************************
 9844                                   ;
 9845                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 9846                                   ;
 9847                                   ;*************************************************************************
 9848
 9849 054522  004737  010434                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9850 054526  004737  017234                    JSR     PC,CHKTSSR              ;SEE HOW TSSR IS
 9851 054532  103407                            BCS     170$                    ;BR, IF NO PROBLEM
 9852 054534  010001                            MOV     R0,R1                   ;SAVE TSSR
 9853 054536  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9857 054542                                    ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
      054542  104456                                                                    TRAP    C$ERHRD
      054544  000531                                                                    .WORD   345
      054546  057045                                                                    .WORD   T27RWN
      054550  011700                                                                    .WORD   PKTSSR
 9858 054552                            170$:   CKLOOP                          ;LOOP IF SELECTED
      054552  104406                                                                    TRAP    C$CLP1
 9859
 9860                                   ;*************************************************************************
 9861                                   ;
 9862                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 9863                                   ;
 9864                                   ;*************************************************************************
 9865
 9866 054554  013701  055536                    MOV     T27BFR+6,R1             ;PICK UP XST0
 9867 054560  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 9868 054562  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9869 054566  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
 9870 054570  001406                            BEQ     175$                    ;BR, IF EQUAL (OK)
 9871 054572  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9875 054576                                    ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      054576  104456                                                                    TRAP    C$ERHRD
      054600  000532                                                                    .WORD   346
      054602  056541                                                                    .WORD   T27BOT
      054604  016344                                                                    .WORD   EXPREC
 9876 054606                            175$:   CKLOOP                          ;LOOP IF SELECTED
      054606  104406                                                                    TRAP    C$CLP1
 9877 054610  012703  000144                    MOV     #100.,R3                ;STARTING RECORD SIZE
 9878 054614  013737  003072  055642  177$:    MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
 9879
 9880                                   ;*************************************************************************
 9881                                   ;
 9882                                   ;WRITE DATA,CVC=1,ACK COMMAND
 9883                                   ;
```

```
 9884                                   ;*************************************************************************
 9885
 9886 054622  012737  140005  055640          MOV     #140005,T27PK3          ;WRITE DATA,CVC=1,ACK COMMAND
 9887 054630  012704  055640                  MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9888 054634  012737  000024  055646          MOV     #20.,T27SZ              ;SET UP RECORD SIZE IN PACKET
 9889 054642  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9890 054646  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9891 054652  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9892 054656  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 9893 054662  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 9894 054664  001406                          BEQ     180$                    ;BR, IF OK
 9895 054666  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9899                                                                         ;SOFT ERROR GENERATED BECAUSE THE
 9900                                                                         ;WRITE COMMAND IS NOT BEING CHECKED
 9901                                                                         ;HERE. IT WAS CHECKED IN CZTUXA
 9902 054672                                  ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      054672  104457                                                                  TRAP    C$ERSOFT
      054674  000533                                                                  .WORD   347
      054676  005011                                                                  .WORD   WRTERR
      054700  011700                                                                  .WORD   PKTSSR
 9903 054702                          180$:   CKLOOP                          ;LOOP IF SELECTED
      054702  104406                                                                  TRAP    C$CLP1
 9904 054704  005303                          DEC     R3                      ;COUNT NUMBER OF RECORDS
 9905 054706  001342                          BNE     177$                    ;BR, IF MORE RECORDS TO WRITE
 9906
 9907                                   ;*************************************************************************
 9908                                   ;
 9909                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 9910                                   ;
 9911                                   ;*************************************************************************
 9912
 9913 054710  004737  010434                  JSR     PC,REWIND               ;ISSUE REWIND
 9914 054714  103411                          BCS     182$                    ;BR, IF ALL IS WELL
 9915 054716  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
 9916 054720  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9917 054724  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9921 054730                                  ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND FAILED
      054730  104456                                                                  TRAP    C$ERHRD
      054732  000534                                                                  .WORD   348
      054734  057045                                                                  .WORD   T27RWN
      054736  011700                                                                  .WORD   PKTSSR
 9922 054740                          182$:   CKLOOP                          ;SELECT LOOP MAYBE
      054740  104406                                                                  TRAP    C$CLP1
 9923
 9924                                   ;*************************************************************************
 9925                                   ;
 9926                                   ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 9927                                   ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 9928                                   ;
 9929                                   ;*************************************************************************
 9930
 9931 054742  012703  000001                  MOV     #1.,R3                  ;SPACE 1 RECORD FORWARD
 9932 054746  004737  010140                  JSR     PC,SPACE                ;ISSUE SPACE COMMAND
 9933 054752  103411                          BCS     185$                    ;BR, IF COMMAND OK
 9934 054754  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
 9935 054756  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
 9936 054762  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
```

```
 9940 054766                                ERRHRD  ERRNO,T27SCF,PKTSSR     ;SPACE FORWARD COMMAND FAILED
      054766  104456                                                          TRAP    C$ERHRD
      054770  000535                                                          .WORD   349
      054772  060307                                                          .WORD   T27SCF
      054774  011700                                                          .WORD   PKTSSR
 9941 054776                          185$:  CKLOOP                          ;LOOP IF SELECTED
      054776  104406                                                          TRAP    C$CLP1
 9942 055000  012703  000144                  MOV     #100.,R3               ;NUMBER OF RECORDS TO BE WRITTEN
 9943 055004  013737  003072  055642          MOV     FREE,T27WB             ;STARTING WRITE BUFFER ADDRESS
 9944
 9945                                ;*************************************************************************
 9946                                ;
 9947                                ;WRITE DATA RETRY,ACK COMMAND
 9948                                ;
 9949                                ;*************************************************************************
 9950
 9951 055012  012737  101005  055640  190$:  MOV     #101005,T27PK3         ;WRITE DATA RETRY,ACK COMMAND
 9952 055020  012704  055640                  MOV     #T27PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
 9953 055024  012737  000024  055646          MOV     #20.,T27SZ             ;SET UP RECORD SIZE IN PACKET
 9954 055032  010465  177776                  MOV     R4,TSDB(R5)            ;ISSUE COMMAND
 995, 055036  004737  017120                  JSR     PC,WAITF               ;WAIT FOR SSR TO SET
 9956 055042  016501  000000                  MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
 9957 055046  012702  000200                  MOV     #SSR,R2                ;SET UP EXPECTED
 9958 055052  020102                          CMP     R1,R2                  ;ARE THEY EQUAL
 9959 055054  001406                          BEQ     200$                   ;BR, IF OK
 9960 055056  004737  020100                  JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9964 055062                                  ERRHRD  ERRNO,T27WDC,PKTSSR    ;TSSR INCORRECT AFTER WRITE DATA
      055062  104456                                                          TRAP    C$ERHRD
      055064  000536                                                          .WORD   350
      055066  057401                                                          .WORD   T27WDC
      055070  011700                                                          .WORD   PKTSSR
 9965 055072                          200$:  CKLOOP                          ;LOOP IF SELECTED
      055072  104406                                                          TRAP    C$CLP1
 9966 055074  013737  003072  055642          MOV     FREE,T27WB             ;STARTING WRITE BUFFER ADDRESS
 9967
 9968                                ;*************************************************************************
 9969                                ;
 9970                                ;WRITE DATA,CVC=1,ACK COMMAND
 9971                                ;
 9972                                ;*************************************************************************
 9973
 9974 055102  012737  140005  055640          MOV     #140005,T27PK3         ;WRITE DATA,CVC=1,ACK COMMAND
 9975 055110  012704  055640                  MOV     #T27PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
 9976 055114  012737  000024  055646          MOV     #20.,T27SZ             ;SET UP RECORD SIZE IN PACKET
 9977 055122  010465  177776                  MOV     R4,TSDB(R5)            ;ISSUE COMMAND
 9978 055126  004737  017120                  JSR     PC,WAITF               ;WAIT FOR SSR TO SET
 9979 055132  016501  000000                  MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
 9980 055136  012702  000200                  MOV     #SSR,R2                ;SET UP EXPECTED
 9981 055142  020102                          CMP     R1,R2                  ;ARE THEY EQUAL
 9982 055144  001406                          BEQ     210$                   ;BR, IF OK
 9983 055146  004737  020100                  JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9987                                                                        ;SOFT ERROR GENERATED BECAUSE THE
 9988                                                                        ;WRITE COMMAND IS NOT BEING CHECKED
 9989                                                                        ;HERE. IT WAS CHECKED IN CZTUXA
 9990 055152                                  ERRSOFT ERRNO,WRTERR,PKTSSR    ;TSSR INCORRECT AFTER WRITE DATA
      055152  104457                                                          TRAP    C$ERSOFT
      055154  000537                                                          .WORD   351
```

```
        055156  005011                                                          .WORD   WRTERR
        055160  011700                                                          .WORD   PKTSSR
  9991  055162                  210$:   CKLOOP                  ;LOOP IF SELECTED
        055162  104406                                                          TRAP    C$CLP1
  9992  055164  005303                  DEC     R3              ;BUMP DOWN RECORD COUNTER
  9993  055166  001311                  BNE     190$            ;BR, IF MORE RECORDS TO WRITE RETRY
  9994
  9995                          ;*****************************************************************
  9996                          ;
  9997                          ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
  9998                          ;
  9999                          ;*****************************************************************
 10000
 10001  055170  004737  010434          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
 10002  055174  103411                  BCS     230$            ;BR, IF NO PROBLEM
 10003  055176  016501  000000          MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
 10004  055202  010004                  MOV     R0,R4           ;GET PACKET ADDRESS
 10005  055204  004737  020100          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 10009  055210                          ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
        055210  104456                                                          TRAP    C$ERHRD
        055212  000540                                                          .WORD   352
        055214  057045                                                          .WORD   T27RWN
        055216  011700                                                          .WORD   PKTSSR
 10010  055220                  230$:   CKLOOP                  ;LOOP IF SELECTED
        055220  104406                                                          TRAP    C$CLP1
 10011
 10012                          ;*****************************************************************
 10013                          ;
 10014                          ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 10015                          ;
 10016                          ;*****************************************************************
 10017
 10018  055222  013701  055536          MOV     T27BFR+6,R1     ;PICK UP XST0
 10019  055226  010102                  MOV     R1,R2           ;SET UP EXPECTED
 10020  055230  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
 10021  055234  020102                  CMP     R1,R2           ;DOES EXP = REC'D
 10022  055236  001406                  BEQ     240$            ;BR, IF EQUAL (OK)
 10023  055240  004737  020100          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
 10027  055244                          ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        055244  104456                                                          TRAP    C$ERHRD
        055246  000541                                                          .WORD   353
        055250  056541                                                          .WORD   T27BOT
        055252  016344                                                          .WORD   EXPREC
 10028  055254                  240$:   CKLOOP                  ;LOOP IF SELECTED
        055254  104406                                                          TRAP    C$CLP1
 10029  055256  012704  055640          MOV     #T27PK3,R4      ;SET UP PACKET ADDRESS
 10030  055262  012737  000010  055642  MOV     #10,T27RB       ;SET UP RECORDS TO SPACE OVER
 10031
 10032                          ;*****************************************************************
 10033                          ;
 10034                          ;ACK,CVC=1,SPACE FORWARD COMMAND
 10035                          ;
 10036                          ;*****************************************************************
 10037
 10038  055270  012737  140010  055640          MOV     #140010,T27PK3  ;ACK,CVC=1,SPACE FORWARD COMMAND
 10039  055276  010465  177776          250$:   MOV     R4,TSDB(R5)     ;ISSUE COMMAND
 10040  055302  005237  055670          252$:   INC     T27CNU          ;BUMP TIMER
```

```
10041 055306                                    DELAY   1                       ;DELAY ABOUT 100US
      055306  012727  000001                                                            MOV     #1,(PC)+
      055312  000000                                                                    .WORD   0
      055314  013727  002116                                                            MOV     L$DLY,(PC)+
      055320  000000                                                                    .WORD   0
      055322  005367  177772                                                            DEC     -6(PC)
      055326  001375                                                                    BNE     .-4
      055330  005367  177756                                                            DEC     -22(PC)
      055334  001367                                                                    BNE     .-20
10042 055336  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR
10043 055342  032701  000200                    BIT     #BIT7,R1                ;CHECK FOR TSSR'S SSR SET
10044 055346  001755                            BEQ     252$                    ;KEEP COUNTING UNTIL SET
10045 055350  016501  000000                    MOV     TSSR(R5),R1             ;GET STATUS FROM TSSR
10046 055354  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
10047 055360  020201                            CMP     R2,R1                   ;WAS EVERYTHING OK
10048 055362  001406                            BEQ     260$                    ;BR, IF ALL IS WELL
10049 055364  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10053 055370                                    ERRHRD  ERRNO,T27SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
      055370  104456                                                                   TRAP    C$ERHRD
      055372  000542                                                                   .WORD   354
      055374  060307                                                                   .WORD   T27SCF
      055376  011700                                                                   .WORD   PKTSSR
10054 055400                            260$:   CKLOOP                          ;LOOP IF SELECTED
      055400  104406                                                                   TRAP    C$CLP1
10055 055402  013701  055666                    MOV     T27CNT,R1               ;TIME FOR WRITE SPACING
10056 055406  013702  055670                    MOV     T27CNU,R2               ;TIME FOR WRITE RETRY SPACING
10057 055412  160102                            SUB     R1,R2                   ;GET'EM PRETTY CLOSE
10058 055414  160102                            SUB     R1,R2                   ;GET'EM PRETTY CLOSE
10059 055416  042702  007777                    BIC     #7777,R2                ;CLEAR LOW 12 BITS
10060 055422  005702                            TST     R2                      ;R2 SHOULD BE ZERO
10061 055424  001407                            BEQ     300$                    ;BR, IF GOOD   CHECK
10062 055426  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10063 055432  005001                            CLR     R1                      ;READY FOR PRINTOUT
10067 055434                                    ERRHRD  ERRNO,T27TIM,EXPREC     ;TIME WAS NOT DIFFERENT ENOUGH
      055434  104456                                                                   TRAP    C$ERHRD
      055436  000543                                                                   .WORD   355
      055440  056634                                                                   .WORD   T27TIM
      055442  016344                                                                   .WORD   EXPREC
10068 055444                            300$:   CKLOOP                          ;LOOP IF SELECTED
      055444  104406                                                                   TRAP    C$CLP1
10069 055446                                    ENDSUB                          ;<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
      055446                                                                          L10073:
      055446  104403                                                                   TRAP    C$ESUB
10070 055450  023727  002170  000031                CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
10071 055456  002402                                BLT     999$                            ;BR, IF LESS THAN 25
10072 055460  004737  020152                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
10073 055464                            999$:
10074                                   ;
10075                                   ;
10076                                   ;
10077 055464  004737  017354                    JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
10078 055470  103002                            BCC     163$                    ;BR, IF NO LOOP REQUIRED
10079 055472  000137  051076                    JMP     T27LOOP                 ;EXECUTE AGAIN
10080 055476                            163$:
10081 055476                                    EXIT    TST                     ;ALL DONE THIS TEST
      055476  104432                                                                   TRAP    C$EXIT
      055500  003322                                                                   .WORD   L10066-.
```

```
10083                                   ;+
10084                                   ;LOCAL STORAGE FOR THIS TEST
10085                                   ;-
10087 055502                                    .BLKB   10-<.-TUV2A&7>
10089 055510                            T27PACKET:                      ;COMMAND PACKET FOR TEST
10090 055510  100004                            .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
10091 055512  055520                            .WORD   T27DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
10092 055514  000000                            .WORD   0
10093 055516  000012                            .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
10094 055520                            T27DATA:                        ;CHARACTERISTICS DATA BLOCK
10095 055520  055530                            .WORD   T27BFR          ;ADDRESS OF MESSAGE BUFFER
10096 055522  000000                            .WORD   0
10097 055524  000024                            .WORD   20.             ;LENGTH OF MESSAGE BUFFER
10098 055526  000000                            .WORD   0
10099 055530                            T27BFR: .BLKW   25.             ;MESSAGE BUFFER
10100                                   ;
10101                                   ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
10102                                   ;
10104 055612                                    .BLKB   10-<.-TUV2A&7>
10106 055620                            T27PK2:
10107 055620  100006                            .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
10108 055622  055650                            .WORD   T27BF2          ;ADDRESS OF SELECT BLOCK DATA
10109 055624  000000                            .WORD   0
10110 055626  000006                            .WORD   6.              ;SIZE OF DATA PACKET
10111
10113 055630                                    .BLKB   10-<.-TUV2A&7>
10115 055640                            T27PK3:
10116 055640  100005                            .WORD   100005          ;REREAD COMMAND, AND ACK
10117 055642                            T27RB:
10118 055642  003072                    T27WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
10119 055644  000000                            .WORD   0
10120 055646  000000                    T27SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
10121                                           .EVEN
10122                                   ;
10123                                   ;
10124                                   ;
10125 055650                            T27BF2:
10126 055650     010                    T27BS0: .BYTE   10              ;BSEL0 AREA
10127 055651     200                    T27BS1: .BYTE   200             ;BSEL1 AREA
10128 055652  000000                    T27S2:  .WORD   0               ;SEL 2 AREA
10129 055654  000000                    T27S3:  .WORD   0               ;DATA AREA
10130                                   ;
10131                                   ;
10132                                           .EVEN
10133                                   ;TAPE MOTION PACKET COMMAND VALUES
10134
10135 055656  100205                    T27RN:  .WORD   100205          ;REREAD DATA (NEXT)
10136 055660  100605                    T27WDR: .WORD   100605          ;REREAD DATA RETRY
10137 055662  102205                    T27CON: .WORD   102205          ;WRITE CONTINOUS
10138 055664  177777                            .WORD   177777          ;END OF DATA
10139
10140                                   ;
10141 055666  000000                    T27CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
10142 055670  000000                    T27CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
10143 055672  000000                    T27DLY: .WORD   0               ;DELAY COUNTER
10144
```

```
10146
10147                                   ;+
10148                                   ;LOCAL TEXT MESSAGES FOR TEST
10149                                   ;-
10150
10151
10152 055674     124     141     160   T27WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPX=1)'
10153 055762     124     123     123   T27RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
10154 056031     122     105     122   T27RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
10155 056126     120     117     123   T27SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
10156 056210     122     111     102   T27LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
10157 056260     124     123     123   T27WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
10158 056335     111     154     154   T27LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
10159 056416     122     105     122   T27SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
10160 056452     124     123     123   T27WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command,At BOT'
10161 056541     124     141     160   T27BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
10162 056634     127     122     111   T27TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
10163 056711     122     105     122   T27EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
10164 056770     124     123     123   T27TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
10165 057045     122     145     167   T27RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
10166 057114     122     101     115   T27RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
10167 057167     124     123     123   T27AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
10168 057236     104     162     151   T27OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
10169 057311     124     123     123   T27WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
10170 057401     124     123     123   T27WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
10171 057454     103     126     103   T27VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
10172 057527     124     123     102   T27BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
10173 057602     127     122     111   T27WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
10174 057671     122     145     141   T27LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
10175 057753     122     145     141   T27LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
10176 060035     122     145     163   T27PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
10177 060123     122     145     141   T27TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
10178 060211     127     122     111   T27NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
10179 060307     124     123     123   T27SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
10180 060364     124     123     123   T27TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
10181 060446     124     123     123   T27WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
10182 060526     104     141     164   T27DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
10183 060623     127     162     151   TST27ID:        .ASCIZ  'Write Data Retry'
10184                                           .EVEN
10185                                   ;+
10186                                   ;
10187                                   ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
10188                                   ;WRITE SUBSYSTEM MEMORY COMMAND
10189                                   ;
10190                                   ;-
10191
10192 060644                             T27REST:
10193 060644                                     SAVREG                          ;SAVE THE REGISTERS
10194 060650   012701   055510                   MOV     #T27PACKET,R1           ;START OF THE PACKET
10195 060654   012721   100004                   MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
10196 060660   012721   055520                   MOV     #T27DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
10197 060664   005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
10198 060666   012721   000012                   MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
10199 060672   012721   055530                   MOV     #T27BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
10200 060676   005021                            CLR     (R1)+
10201 060700   012721   000024                   MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
10202 060704   005021                            CLR     (R1)+
```

```
10203 060706  012711  000000                    MOV     #0,(R1)                 ;SELECT DRIVE ZERO
10204 060712  012702  000030                    MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
10205 060716  012762  177777  055530  64$:      MOV     #177777,T27BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
10206 060724  005742                           TST     -(R2)                   ;NEXT LOCATION
10207 060726  022702  000000                    CMP     #0,R2                   ;AT END OF LOOP YET
10208 060732  001371                           BNE     64$                     ;KEEP GOING UNTIL DONE
10209 060734  000207                           RTS     PC                      ;RETURN
10210
10211
10212 060736                           T27RT2:
10213 060736                                   SAVREG                          ;SAVE THE REGISTERS
10214 060742  012701  055620                    MOV     #T27PK2,R1              ;START OF THE PACKET
10215 060746  012721  100006                    MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
10216 060752  012721  055650                    MOV     #T27BF2,(R1)+           ;ADDRESS OF DATA BLOCK
10217 060756  005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
10218 060760  012721  000006                    MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
10219 060764  005021                           CLR     (R1)+
10220 060766  012701  055650                    MOV     #T27BF2,R1              ;POINT TO DATA SEL AREA
10221 060772  005021                           CLR     (R1)+
10222 060774  005011                           CLR     (R1)
10223 060776  000207                           RTS     PC                      ;RETURN
10224 061000                           T27RT3:
10225 061000                                   SAVREG                          ;SAVE REGISTERS
10226 061004  012701  055640                    MOV     #T27PK3,R1              ;SET UP POINTER ADDRESS
10227 061010  005021                           CLR     (R1)+                   ;COMMAND SPACE
10228 061012  005021                           CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
10229 061014  005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
10230 061016  005011                           CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
10231 061020  000207                           RTS     PC                      ;RETURN
10232 061022                                   ENDTST
      061022                                                           L10066:
      061022  104401                                                           TRAP    C$ETST
```

```
10234                                           .SBTTL  TEST  4: WRITE/READ TAPE MARK
10235                                   ;+
10236                                   ;
10237                                   ;THIS TEST VERIFIES THAT THE WRITE TAPE MARK COMMAND OPERATES
10238                                   ;PROPERLY. IT IS VERIFIED THAT THE TAPE MARK IS WRITTEN ONTO TAPE
10239                                   ;BY CHECKING THAT THE READ AND SPACE RECORDS COMMANDS DETECT THE
10240                                   ;TAPE MARK. IN ADDITION, SINCE WRITE TAPE MARK IS THE FIRST
10241                                   ;SUBCOMMAND UNDER THE FORMAT COMMAND BEING TESTED, IT IS VERIFIED
10242                                   ;THAT THE CLEAR VOLUME CHECK (CVC) BIT OPERATES PROPERLY AND THAT
10243                                   ;FORMAT COMMANDS WITH ILLEGAL MODE CODES ARE REJECTED.
10244                                   ;
10245                                   ;
10246                                   ;THE TEST CONSISTS OF THE FOLLOWING 3 SUBTESTS
10247                                   ;
10248                                   ;
10249                                   ;
10250                                   ;-
10251 061024                                       BGNTST
       061024                                                                   T4::
10252 061024   005037   002170                     CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
10253 061030   005037   003100                     CLR     KTFLG           ;HOLD OFF KT11
10254 061034   012737   005764   002146           MOV     #EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
10255 061042   005037   003102                     CLR     KTENABLE                ;TURN KT11 OFF
10256 061046   004737   020244                     JSR     PC,KTOFF                ;TURN KT11 BACK OFF IF THERE
10261 061052   012700   065241                     MOV     #TST28ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
10262 061056   004737   017406                     JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
10263 061062   012737   000001   002164           MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
10264 061070                                   T28LOOP:
```

```
10266                   ;+
10267                   ;
10268                   ;TEST 4, SUBTEST 1
10269                   ;
10270                   ;VERIFIES THAT WRITE TAPE MARK COMMANDS OPERATE
10271                   ;PROPERLY, AND THAT READ COMMANDS SUBSEQUENTLY ISSUED
10272                   ;TO DETECT THE WRITTEN TAPE MARKS TERMINATE WITH TAPE
10273                   ;STATUS ALERT WITH THE TAPE MARK DETECTED (TMK) STATUS
10274                   ;BIT SET. THE FOLLOWING SEQUENCE IS EXECUTED.
10275                   ;
10276                   ;1.     THE CONTROLLER IS INITIALIZED AND TAPE REWOUND.
10277                   ;       THIS SETS THE VOLUME CHECK (VCK) STATUS BIT.
10278                   ;
10279                   ;2.     A WRITE TAPE MARK COMMAND WITH CVC=1 IS ISSUED
10280                   ;       AND PROPER TERMINATION AND STATUS IS VERIFIED
10281                   ;       (I.E. VCK=0 AND TMK=1).
10282                   ;
10283                   ;3.     SEVERAL MORE WRITE TAPE MARK COMMANDS, THESE WITH
10284                   ;       CVC=0 ARE ISSUED AND PROPER TERMINATION (NORMAL)
10285                   ;       AND STATUS (TMK) VERIFIED.
10286                   ;
10287                   ;4.     A READ REVERSE COMMAND IS ISSUED AND PROPER
10288                   ;       TERMINATION (TAPE STATUS ALERT) AND STATUS (TMK)
10289                   ;       VERIFIED. IT IS ALSO VERIFIED THAT NO DATA IS
10290                   ;       TRANSFERRED INTO MEMORY.
10291                   ;
10292                   ;5.     A SPACE RECORDS REVERSE COMMAND IS ISSUED AND
10293                   ;       PROPER TERMINATION (TAPE STATUS ALERT) AND STATUS
10294                   ;       (TMK) VERIFIED.
10295                   ;
10296                   ;6.     THE TAPE IS REWOUND AND A READ FORWARD COMMAND IS
10297                   ;       ISSUED AND PROPER TERMINATION (TAPE STATUS ALERT)
10298                   ;       AND STATUS (TMK) VERIFIED. IT IS ALSO VERIFIED
10299                   ;       THAT NO DATA IS TRANSFERRED INTO MEMORY.
10300                   ;
10301                   ;7.     A SPACE RECORDS REVERSE COMMAND THAT CONTAINS A
10302                   ;       RECORD COUNT GREATER THAN 1 IS ISSUED AND IT IS
10303                   ;       VERIFIED THAT TAPE STATUS ALERT TERMINATION
10304                   ;       OCCURED, TMK=1 AND THAT RBPCR (RESIDUAL
10305                   ;       BYTE/RECORD COUNTER) CONTAINS THE PROPER NONZERO
10306                   ;       VALUE. THIS OPERATION VERIFIES THAT DETECTION OF
10307                   ;       THE TAPE MARK CAUSES THE SPACE RECORDS OPERATION
10308                   ;       TO BE PREMATURELY TERMINATED. THIS SHOULD LEAVE
10309                   ;       THE POSITION JUST BEFORE THE FIRST RECORD ON
10310                   ;       TAPE.
10311                   ;
10312                   ;8.     TAPE POSITION IS VERIFIED BY ISSUING ANOTHER
10313                   ;       SPACE RECORDS REVERSE COMMAND AND VERIFYING THAT
10314                   ;       TAPE STATUS ALERT TERMINATION OCCURS, WITH THE
10315                   ;       REVERSE INTO BOT (RIB) STATUS ERROR BIT SET.
10316                   ;
10317                   ;9.     A SPACE RECORDS FORWARD COMMAND THAT CONTAINS A
10318                   ;       RECORD COUNT GREATER THAN 1 IS ISSUED AND IT IS
10319                   ;       VERIFIED THAT TAPE STATUS ALERT TERMINATION
10320                   ;       OCCURED, TMK=1, AND THAT RBPCR (RESIDUAL
10321                   ;       BYTE/RECORD COUNTER) CONTAINS THE PROPER NONZERO
10322                   ;       VALUE. THIS OPERATION VERIFIES THAT DETECTION OF
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10323                                   ;       THE TAPE MARK CAUSES THE SPACE RECORDS OPERATION
10324                                   ;       TO BE PREMATURELY TERMINATED.
10325                                   ;
10326                                   ;
10327                                   ;
10328                                   ;
10329                                   ;
10330                                   ;
10331                                   ;-
10332 061070                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
       061070                                                                                    T4.1:
       061070  104402                                                                              TRAP    C$BSUB
10333 061072  004737  065266                    JSR     PC,T28REST              ;SET COMMAND PACKET
10334 061076  004737  065360                    JSR     PC,T28RT2               ;SET UP OTHER COMMAND PACKET
10335 061102  004737  065422                    JSR     PC,T28RT3               ;SET UP OTHER COMMAND PACKET
10336 061106  012737  023420  063372            MOV     #10000.,T28DLY          ;SET UP DELAY ROUTINE
10337 061114  004737  016644          10$:      JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
10338 061120  103426                            BCS     20$                     ;BR IF INIT WAS OK
10339 061122                                    DELAY   250                     ;DELAY ABOUT .25 SECONDS
       061122  012727  000250                                                                   MOV     #250,(PC)+
       061126  000000                                                                            .WORD   0
       061130  013727  002116                                                                   MOV     L$DLY,(PC)+
       061134  000000                                                                            .WORD   0
       061136  005367  177772                                                                   DEC     -6(PC)
       061142  001375                                                                           BNE     .-4
       061144  005367  177756                                                                   DEC     -22(PC)
       061150  001367                                                                           BNE     .-20
10340 061152  005337  063372                    DEC     T28DLY                  ;BUMP DELAY ROUTINE DOWN
10341 061156  001356                            BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
10342 061160  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10346 061164  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
10347 061166                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
       061166  104455                                                                           TRAP    C$ERDF
       061170  000621                                                                           .WORD   401
       061172  003550                                                                           .WORD   SFIERR
       061174  011666                                                                           .WORD   SFIMSG
10348 061176                            20$:
10349 061176  012704  063200                    MOV     #T28PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
10350 061202  004737  010332                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
10351 061206  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
10352 061210  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10356 061214  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
10357 061216                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
       061216  104456                                                                           TRAP    C$ERHRD
       061220  000622                                                                           .WORD   402
       061222  004754                                                                           .WORD   WRTMSG
       061224  011666                                                                           .WORD   SFIMSG
10358 061226                            23$:    CKLOOP                          ;LOOP IF SELECTED
       061226  104406                                                                           TRAP    C$CLP1
10359 061230  004737  010434                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
10360 061234  103411                            BCS     30$                     ;BR, IF NO PROBLEM
10361 061236  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR
10362 061242  010004                            MOV     R0,R4                   ;SAVE PACKET ADDRESS
10363 061244  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10367 061250                                    ERRHRD  ERRNO,T28RWN,PKTSSR     ;REWIND NOT ACCEPTED
       061250  104456                                                                           TRAP    C$ERHRD
       061252  000623                                                                           .WORD   403
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        061254  064321                                                    .WORD   T28RWN
        061256  011700                                                    .WORD   PKTSSR
10368   061260                  30$:    CKLOOP                          ;LOOP IF SELECTED
        061260  104406                                                    TRAP    C$CLP1
10369   061262  013701  063226          MOV     T28BFR+6,R1             ;PICK UP XSTO
10370   061266  010102                  MOV     R1,R2                   ;SET UP EXPECTED
10371   061270  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
10372   061274  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
10373   061276  001406                  BEQ     40$                     ;BR, IF EQUAL (OK)
10374   061300  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10378   061304                          ERRHRD  ERRNO,T28BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        061304  104456                                                    TRAP    C$ERHRD
        061306  000624                                                    .WORD   404
        061310  064177                                                    .WORD   T28BOT
        061312  016344                                                    .WORD   EXPREC
10379   061314                  40$:    CKLOOP                          ;LOOP IF SELECTED
        061314  104406                                                    TRAP    C$CLP1
10380   061316  012704  063200          MOV     #T28PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
10381   061322  004737  010332          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
10382   061326  103407                  BCS     68$                     ;BR, IF COMMAND ISSUED OK
10383   061330  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10387   061334  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
10388   061336                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        061336  104456                                                    TRAP    C$ERHRD
        061340  000625                                                    .WORD   405
        061342  004754                                                    .WORD   WRTMSG
        061344  011666                                                    .WORD   SFIMSG
10389   061346                  68$:    CKLOOP                          ;LOOP IF SELECTED
        061346  104406                                                    TRAP    C$CLP1
10390   061350  012737  140011  063330  MOV     #140011,T28PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
10391   061356  012704  063330          MOV     #T28PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10392   061362  010465  177776          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10393   061366  004737  017120          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10394   061372  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10395   061376  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
10396   061402  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
10397   061404  001406                  BEQ     70$                     ;BR, IF OK
10398   061406  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10402   061412                          ERRHRD  ERRNO,T28WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
        061412  104456                                                    TRAP    C$ERHRD
        061414  000626                                                    .WORD   406
        061416  064443                                                    .WORD   T28WDC
        061420  011700                                                    .WORD   PKTSSR
10403   061422                  70$:    CKLOOP                          ;LOOP IF SELECTED
        061422  104406                                                    TRAP    C$CLP1
10404   061424  013701  063226          MOV     T28BFR+6,R1             ;PICK UP XSTO (VCK CHECK)
10405   061430  010102                  MOV     R1,R2                   ;SET UP EXPECTED
10406   061432  042702  000020          BIC     #BIT4,R2                ;VCK SHOULD BE 0
10407   061436  020102                  CMP     R1,R2                   ;IS VCK SET CORRECTLY
10408   061440  001406                  BEQ     80$                     ;BR, IF VCK IS CLEAR
10409   061442  004737  020100          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10413   061446                          ERRHRD  ERRNO,T28VCK,EXPREC     ;VCK WAS NOT CLEAR AFTER CVC=1
        061446  104456                                                    TRAP    C$ERHRD
        061450  000627                                                    .WORD   407
        061452  064522                                                    .WORD   T28VCK
        061454  016344                                                    .WORD   EXPREC
10414   061456                  80$:    CKLOOP                          ;LOOP IF SELECTED
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                061456  104406                                                          TRAP    C$CLP1
10415           061460  013701  063226                  MOV     T28BFR+6,R1             ;PICK UP XSTO (CHECK TMK)
10416           061464  010102                          MOV     R1,R2                   ;SET UP EXPECTED
10417           061466  052702  100000                  BIS     #BIT15,R2               ;TMK SHOULD BE SET
10418           061472  020102                          CMP     R1,R2                   ;WAS TMK SET
10419           061474  001406                          BEQ     90$                     ;BR, IF TMK WAS SET
10420           061476  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10424           061502                                  ERRHRD  ERRNO,T28TMK,EXPREC     ;TMK WAS NOT SET AFTER WRT TAPE MARK
                061502  104456                                                          TRAP    C$ERHRD
                061504  000630                                                          .WORD   408
                061506  064575                                                          .WORD   T28TMK
                061510  016344                                                          .WORD   EXPREC
10425           061512                          90$:    CKLOOP                          ;LOOP IF SELECTED
                061512  104406                                                          TRAP    C$CLP1
10426           061514  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
10427           061520  103411                          BCS     130$                    ;BR, IF NO PROBLEM
10428           061522  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
10429           061524  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
10430           061530  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10434           061534                                  ERRHRD  ERRNO,T28RWN,PKTSSR     ;REWIND NOT ACCEPTED
                061534  104456                                                          TRAP    C$ERHRD
                061536  000631                                                          .WORD   409
                061540  064321                                                          .WORD   T28RWN
                061542  011700                                                          .WORD   PKTSSR
10435           061544                          130$:   CKLOOP                          ;LOOP IF SELECTED
                061544  104406                                                          TRAP    C$CLP1
10436           061546  013701  063226                  MOV     T28BFR+6,R1             ;PICK UP XSTO
10437           061552  010102                          MOV     R1,R2                   ;SET UP EXPECTED
10438           061554  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
10439           061560  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
10440           061562  001406                          BEQ     140$                    ;BR, IF EQUAL (OK)
10441           061564  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10445           061570                                  ERRHRD  ERRNO,T28BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                061570  104456                                                          TRAP    C$ERHRD
                061572  000632                                                          .WORD   410
                061574  064177                                                          .WORD   T28BOT
                061576  016344                                                          .WORD   EXPREC
10446           061600                          140$:   CKLOOP                          ;LOOP IF SELECTED
                061600  104406                                                          TRAP    C$CLP1
10447           061602  012703  000012          150$:   MOV     #10.,R3                 ;NUMBER OF RECORDS TO WRITE TM
10448           061606  012737  140011  063330          MOV     #140011,T28PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
10449           061614  012704  063330                  MOV     #T28PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10450           061620  010465  177776          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10451           061624  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10452           061630  016501  000000                  MOV     TSSR(R5),R1             ;PICK UP TSSR
10453           061634  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
10454           061640  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
10455           061642  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
10456           061644  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10460           061650                                  ERRHRD  ERRNO,T28WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
                061650  104456                                                          TRAP    C$ERHRD
                061652  000633                                                          .WORD   411
                061654  064443                                                          .WORD   T28WDC
                061656  011700                                                          .WORD   PKTSSR
10461           061660                          165$:   CKLOOP                          ;LOOP IF SELECTED
                061660  104406                                                          TRAP    C$CLP1
10462           061662  013701  063226                  MOV     T28BFR+6,R1             ;PICK UP XSTO
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10463 061666 010102                        MOV     R1,R2                   ;SET UP EXPECTED
10464 061670 052702 100000                 BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
10465 061674 020102                        CMP     R1,R2                   ;DOES EXP = REC'D
10466 061676 001406                        BEQ     180$                    ;BR, IF EQUAL (OK)
10467 061700 004737 020100                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10471 061704                               ERRHRD  ERRNO,T28TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
      061704 104456                                                              TRAP    C$ERHRD
      061706 000634                                                              .WORD   412
      061710 064575                                                              .WORD   T28TMK
      061712 016344                                                              .WORD   EXPREC
10472 061714                        180$:  CKLOOP                          ;LOOP IF SELECTED
      061714 104406                                                              TRAP    C$CLP1
10473 061716 005303                        DEC     R3                      ;BUMP COUNTER DOWN
10474 061720 001337                        BNE     155$                    ;BR, IF LESS THAN 10 TAPE MARKS
10475 061722 012700 177777                 MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
10476 061726 004737 020372                 JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
10477 061732 013737 003072 063332          MOV     FREE,T28WB              ;STARTING READ BUFFER ADDRESS
10478 061740 012737 140401 063330          MOV     #140401,T28PK3          ;READ REVERSE,ACK, COMMAND
10479 061746 012704 063330                 MOV     #T28PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10480 061752 013737 000024 063336          MOV     20.,T28SZ               ;SET UP RECORD SIZE IN PACKET
10481 061760 010465 177776                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10482 061764 004737 017120                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10483 061770 016501 000000                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10484 061774 012702 100204                 MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
10485 062000 020102                        CMP     R1,R2                   ;ARE THEY EQUAL
10486 062002 001406                        BEQ     200$                    ;BR, IF OK
10487 062004 004737 020100                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10491 062010                               ERRHRD  ERRNO,T28RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      062010 104456                                                              TRAP    C$ERHRD
      062012 000635                                                              .WORD   413
      062014 063534                                                              .WORD   T28RDF
      062016 011700                                                              .WORD   PKTSSR
10492 062020                        200$:  CKLOOP                          ;LOOP IF SELECTED
      062020 104406                                                              TRAP    C$CLP1
10493 062022 013701 063226                 MOV     T28BFR+6,R1             ;PICK UP XST0
10494 062026 010102                        MOV     R1,R2                   ;SET UP EXPECTED
10495 062030 052702 100000                 BIS     #BIT15,R2               ;TMK SHOULD BE SET
10496 062034 020102                        CMP     R1,R2                   ;IS TMK SET
10497 062036 001406                        BEQ     210$                    ;BR, IF TMK WAS SET (GOOD)
10498 062040 004737 020100                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10502 062044                               ERRHRD  ERRNO,T28RRM,EXPREC     ;TMK NOT SET AFTER READ REV
      062044 104456                                                              TRAP    C$ERHRD
      062046 000636                                                              .WORD   414
      062050 064647                                                              .WORD   T28RRM
      062052 016344                                                              .WORD   EXPREC
10503 062054                        210$:  CKLOOP                          ;LOOP IF SELECTED
      062054 104406                                                              TRAP    C$CLP1
10504 062056 017701 121010                 MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
10505 062062 012702 177777                 MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
10506 062066 020102                        CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
10507 062070 001406                        BEQ     220$                    ;BR, IF NO DATA TRANS (GOOD)
10508 062072 004737 020100                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10512 062076                               ERRHRD  ERRNO,T28DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
      062076 104456                                                              TRAP    C$ERHRD
      062100 000637                                                              .WORD   415
      062102 065062                                                              .WORD   T28DTR
      062104 016344                                                              .WORD   EXPREC
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10513 062106                          220$:   CKLOOP                          ;LOOP IF SELECTED
      062106  104406                                                                  TRAP    C$CLP1
10514 062110  012737  100410  063330          MOV     #100410,T28PK3          ;SPACE REVERSE,ACK, COMMAND
10515 062116  012737  000001  063332          MOV     #1,T28RB                ;NUMBER OF RECORDS TO SPACE BACK
10516 062124  012704  063330                  MOV     #T28PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10517 062130  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10518 062134  004737  017120                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10519 062140  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10520 062144  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
10521 062150  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
10522 062152  001406                          BEQ     222$                    ;BR, IF OK
10523 062154  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10527 062160                                  ERRHRD  ERRNO,T28RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
      062160  104456                                                                  TRAP    C$ERHRD
      062162  000640                                                                  .WORD   416
      062164  063615                                                                  .WORD   T28RDG
      062166  011700                                                                  .WORD   PKTSSR
10528 062170                          222$:   CKLOOP                          ;LOOP IF SELECTED
      062170  104406                                                                  TRAP    C$CLP1
10529 062172  013701  063226                  MOV     T28BFR+6,R1             ;PICK UP XSTO
10530 062176  010102                          MOV     R1,R2                   ;SET UP EXPECTED
10531 062200  052702  100000                  BIS     #BIT15,R2               ;TMK SHOULD BE SET
10532 062204  020102                          CMP     R1,R2                   ;IS TMK SET
10533 062206  001406                          BEQ     226$                    ;BR, IF TMK WAS SET (GOOD)
10534 062210  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10538 062214                                  ERRHRD  ERRNO,T28RRN,EXPREC     ;TMK NOT SET AFTER SPACE REV
      062214  104456                                                                  TRAP    C$ERHRD
      062216  000641                                                                  .WORD   417
      062220  064725                                                                  .WORD   T28RRN
      062222  016344                                                                  .WORD   EXPREC
10539 062224                          226$:   CKLOOP                          ;LOOP IF SELECTED
      062224  104406                                                                  TRAP    C$CLP1
10540 062226  004737  010434                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
10541 062232  103411                          BCS     230$                    ;BR, IF NO PROBLEM
10542 062234  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
10543 062236  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
10544 062242  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10548 062246                                  ERRHRD  ERRNO,T28RWN,PKTSSR     ;REWIND NOT ACCEPTED
      062246  104456                                                                  TRAP    C$ERHRD
      062250  000642                                                                  .WORD   418
      062252  064321                                                                  .WORD   T28RWN
      062254  011700                                                                  .WORD   PKTSSR
10549 062256                          230$:   CKLOOP                          ;LOOP IF SELECTED
      062256  104406                                                                  TRAP    C$CLP1
10550 062260  013701  063226                  MOV     T28BFR+6,R1             ;PICK UP XSTO
10551 062264  010102                          MOV     R1,R2                   ;SET UP EXPECTED
10552 062266  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
10553 062272  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
10554 062274  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
10555 062276  004737  020100                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10559 062302                                  ERRHRD  ERRNO,T28BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      062302  104456                                                                  TRAP    C$ERHRD
      062304  000643                                                                  .WORD   419
      062306  064177                                                                  .WORD   T28BOT
      062310  016344                                                                  .WORD   EXPREC
10560 062312                          240$:   CKLOOP                          ;LOOP IF SELECTED
      062312  104406                                                                  TRAP    C$CLP1
```

```
10561 062314  012700  177777              MOV     #177777,R0          ;VALUE TO WRITTEN TO MEMORY
10562 062320  004737  020372              JSR     PC,FILLMEM          ;FILL MEM WITH ALL ONES
10563 062324  013737  003072  063332      MOV     FREE,T28RB          ;STARTING READ BUFFER ADDRESS
10564 062332  012737  100001  063330      MOV     #100001,T28PK3      ;READ FORWARD,ACK, COMMAND
10565 062340  012704  063330              MOV     #T28PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
10566 062344  013737  000024  063336      MOV     20.,T28SZ           ;SET UP RECORD SIZE IN PACKET
10567 062352  010465  177776              MOV     R4,TSDB(R5)         ;ISSUE COMMAND
10568 062356  004737  017120              JSR     PC,WAITF            ;WAIT FOR SSR TO SET
10569 062362  016501  000000              MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
10570 062366  012702  100204              MOV     #SSR!SC!BIT2,R2     ;SET UP EXPECTED
10571 062372  020102                      CMP     R1,R2               ;ARE THEY EQUAL
10572 062374  001406                      BEQ     245$                ;BR, IF OK
10573 062376  004737  020100              JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
10577 062402                              ERRHRD  ERRNO,T28WDE,PKTSSR ;TSSR INCORRECT AFTER WRITE DATA
      062402  104456                                                          TRAP    C$ERHRD
      062404  000644                                                          .WORD   420
      062406  064106                                                          .WORD   T28WDE
      062410  011700                                                          .WORD   PKTSSR
10578 062412                      245$:   CKLOOP                      ;LOOP IF SELECTED
      062412  104406                                                          TRAP    C$CLP1
10579 062414  013701  063226              MOV     T28BFR+6,R1         ;PICK UP XSTO
10580 062420  010102                      MOV     R1,R2               ;SET UP EXPECTED
10581 062422  052702  100000              BIS     #BIT15,R2           ;TMK SHOULD BE SET
10582 062426  020102                      CMP     R1,R2               ;IS TMK SET
10583 062430  001406                      BEQ     247$                ;BR, IF TMK WAS SET (GOOD)
10584 062432  004737  020100              JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
10588 062436                              ERRHRD  ERRNO,T28RRP,EXPREC ;TMK NOT SET AFTER READ REV
      062436  104456                                                          TRAP    C$ERHRD
      062440  000645                                                          .WORD   421
      062442  065004                                                          .WORD   T28RRP
      062444  016344                                                          .WORD   EXPREC
10589 062446                      247$:   CKLOOP                      ;LOOP IF SELECTED
      062446  104406                                                          TRAP    C$CLP1
10590 062450  017701  120416              MOV     @FREE,R1                    ;FIRST LOC IN READ BUFFER
10591 062454  012702  177777              MOV     #177777,R2          ;EXPECTED IF NO DATA TRANS.
10592 062460  020102                      CMP     R1,R2               ;DID ANY DATA GET TRANSFERRED
10593 062462  001406                      BEQ     250$                ;BR, IF NO DATA TRANS (GOOD)
10594 062464  004737  020100              JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
10598 062470                              ERRHRD  ERRNO,T28DTR,EXPREC ;DATA TRANSFERRED ON READ TAPE MARK
      062470  104456                                                          TRAP    C$ERHRD
      062472  000646                                                          .WORD   422
      062474  065062                                                          .WORD   T28DTR
      062476  016344                                                          .WORD   EXPREC
10599 062500                      250$:   CKLOOP                      ;LOOP IF SELECTED
      062500  104406                                                          TRAP    C$CLP1
10600 062502  012737  100410  063330      MOV     #100410,T28PK3      ;SPACE REVERSE,ACK, COMMAND
10601 062510  012737  000005  063332      MOV     #5,T28RB            ;NUMBER OF RECORDS TO SPACE BACK
10602 062516  012704  063330              MOV     #T28PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
10603 062522  010465  177776              MOV     R4,TSDB(R5)         ;ISSUE COMMAND
10604 062526  004737  017120              JSR     PC,WAITF            ;WAIT FOR SSR TO SET
10605 062532  016501  000000              MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
10606 062536  012702  100204              MOV     #SSR!SC!BIT2,R2     ;SET UP EXPECTED
10607 062542  020102                      CMP     R1,R2               ;ARE THEY EQUAL
10608 062544  001406                      BEQ     260$                ;BR, IF OK
10609 062546  004737  020100              JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
10613 062552                              ERRHRD  ERRNO,T28RDG,PKTSSR ;TSSR INCORRECT AFTER SPACE REV CMD.
      062552  104456                                                          TRAP    C$ERHRD
```

```
                                                                                .WORD   423
                                                                                .WORD   T28RDG
                                                                                .WORD   PKTSSR
10614 062562                            260$:   CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
      062562  104406
10615 062564  013701  063226                    MOV     T28BFR+6,R1             ;PICK UP XST0
10616 062570  010102                           MOV     R1,R2                   ;SET UP EXPECTED
10617 062572  052702  100000                    BIS     #BIT15,R2               ;TMK SHOULD BE SET
10618 062576  020102                           CMP     R1,R2                   ;IS TMK SET
10619 062600  001406                           BEQ     270$                    ;BR, IF TMK WAS SET (GOOD)
10620 062602  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10624 062606                                   ERRHRD  ERRNO,T28RRN,EXPREC     ;TMK NOT SET AFTER READ REV
                                                                                TRAP    C$ERHRD
      062606  104456                                                           .WORD   424
      062610  000650                                                           .WORD   T28RRN
      062612  064725                                                           .WORD   EXPREC
      062614  016344
10625 062616                            270$:   CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
      062616  104406
10626 062620  013701  063224                    MOV     T28BFR+4,R1             ;PICK UP RESIDUAL BYTE COUNTER
10627 062624  012702  000004                    MOV     #4.,R2                  ;SHOULD BE THE DIFFERENCE
10628 062630  020102                           CMP     R1,R2                   ;IS COUNTER CORRECT
10629 062632  001406                           BEQ     280$                    ;BR, IF COUNTER CORRECT
10630 062634  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10634 062640                                   ERRHRD  ERRNO,T28PBP,EXPREC     ;RESIDUAL BYTE COUNTER NOT CORRECT
                                                                                TRAP    C$ERHRD
      062640  104456                                                           .WORD   425
      062642  000651                                                           .WORD   T28PBP
      062644  063451                                                           .WORD   EXPREC
      062646  016344
10635 062650                            280$:   CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
      062650  104406
10636 062652  012737  100410  063330            MOV     #100410,T28PK3          ;SPACE REVERSE,ACK, COMMAND
10637 062660  012737  000001  063332            MOV     #1,T28RB                ;NUMBER OF RECORDS TO SPACE BACK
10638 062666  012704  063330                    MOV     #T28PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10639 062672  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10640 062676  004737  017120                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10641 062702  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10642 062706  012702  100204                    MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
10643 062712  020102                           CMP     R1,R2                   ;ARE THEY EQUAL
10644 062714  001406                           BEQ     290$                    ;BR, IF OK
10645 062716  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 EPRORS
10649 062722                                   ERRHRD  ERRNO,T28RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
                                                                                TRAP    C$ERHRD
      062722  104456                                                           .WORD   426
      062724  000652                                                           .WORD   T28RDG
      062726  063615                                                           .WORD   PKTSSR
      062730  011700
10650 062732                            290$:   CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
      062732  104406
10651 062734  013701  063234                    MOV     T28BFR+14,R1            ;PICK UP XST3
10652 062740  010102                           MOV     R1,R2                   ;SET UP EXPECTED
10653 062742  052702  000001                    BIS     #BIT0,R2                ;RIB SHOULD BE SET
10654 062746  020102                           CMP     R1,R2                   ;IS RIB SET
10655 062750  001406                           BEQ     300$                    ;BR, IF RIB WAS SET (GOOD)
10656 062752  004737  020100                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10660 062756                                   ERRHRD  ERRNO,T28RIB,EXPREC     ;RIB NOT SET AFTER READ REV
                                                                                TRAP    C$ERHRD
      062756  104456                                                           .WORD   427
      062760  000653                                                           .WORD   T28RIB
      062762  063374
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                062764  016344                                                          .WORD   EXPREC
10661           062766                          300$:   CKLOOP                          ;LOOP IF SELECTED
                062766  104406                                                          TRAP    C$CLP1
10662 062770    012737  100010  063330                  MOV     #100010,T28PK3          ;SPACE FORWARD,ACK, COMMAND
10663 062776    012737  000005  063332                  MOV     #5,T28RB                ;NUMBER OF RECORDS TO SPACE FORW.
10664 063004    012704  063330                          MOV     #T28PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10665 063010    010465  177776                          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10666 063014    004737  017120                          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10667 063020    016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10668 063024    012702  100204                          MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
10669 063030    020102                                  CMP     R1,R2                   ;ARE THEY EQUAL
10670 063032    001406                                  BEQ     310$                    ;BR, IF OK
10671 063034    004737  020100                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10675 063040                                            ERRHRD  ERRNO,T28RDF,EXPREC     ;TSSR INCORRECT AFTER SPACE CMD.
                063040  104456                                                          TRAP    C$ERHRD
                063042  000654                                                          .WORD   428
                063044  063534                                                          .WORD   T28RDF
                063046  016344                                                          .WORD   EXPREC
10676 063050                            310$:   CKLOOP                                  ;LOOP IF SELECTED
                063050  104406                                                          TRAP    C$CLP1
10677 063052    013701  063226                          MOV     T28BFR+6,R1             ;PICK UP XSTO
10678 063056    010102                                  MOV     R1,R2                   ;SET UP EXPECTED
10679 063060    052702  100000                          BIS     #BIT15,R2               ;TMK SHOULD BE SET
10680 063064    020102                                  CMP     R1,R2                   ;IS TMK SET
10681 063066    001406                                  BEQ     320$                    ;BR, IF TMK WAS SET (GOOD)
10682 063070    004737  020100                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10686 063074                                            ERRHRD  ERRNO,T28RRP,EXPREC     ;TMK NOT SET AFTER READ REV
                063074  104456                                                          TRAP    C$ERHRD
                063076  000655                                                          .WORD   429
                063100  065004                                                          .WORD   T28RRP
                063102  016344                                                          .WORD   EXPREC
10687 063104                            320$:   CKLOOP                                  ;LOOP IF SELECTED
                063104  104406                                                          TRAP    C$CLP1
10688 063106    013701  063224                          MOV     T28BFR+4,R1             ;PICK UP RESIDUAL BYTE COUNTER
10689 063112    012702  000004                          MOV     #4.,R2                  ;SHOULD BE THE DIFFERENCE
10690 063116    020102                                  CMP     R1,R2                   ;IS COUNTER CORRECT
10691 063120    001406                                  BEQ     330$                    ;BR, IF COUNTER CORRECT
10692 063122    004737  020100                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10696 063126                                            ERRHRD  ERRNO,T28PBP,EXPREC     ;RESIDUAL BYTE COUNTER NOT CORRECT
                063126  104456                                                          TRAP    C$ERHRD
                063130  000656                                                          .WORD   430
                063132  063451                                                          .WORD   T28PBP
                063134  016344                                                          .WORD   EXPREC
10697 063136                            330$:   CKLOOP                                  ;LOOP IF SELECTED
                063136  104406                                                          TRAP    C$CLP1
10698 063140                                    ENDSUB                                  ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
                063140                                                                          L10075:
                063140  104403                                                          TRAP    C$ESUB
10699 063142    023727  002170  000031                  CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
10700 063150    002402                                  BLT     999$                            ;BR, IF LESS THAN 25
10701 063152    004737  020152                          JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
10702 063156                            999$:
10703                                   ;
10704                                   ;
10705                                   ;
10706 063156    004737  017354                          JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
10707 063162    103002                                  BCC     163$                    ;BR, IF NO LOOP REQUIRED
```

TEST 4: WRITE/READ TAPE MARK

```
10708 063164  000137  061070          JMP     T28LOOP             ;EXECUTE AGAIN
10709 063170                    163$:
10710 063170                          EXIT    TST                 ;ALL DONE THIS TEST
      063170  104432                                                TRAP    CSEXIT
      063172  002252                                                .WORD   L10074-.
```

```
10712                                   ;+
10713                                   ;LOCAL STORAGE FOR THIS TEST
10714                                   ;-
10716 063174                                    .BLKB   10-<.-TUV2A&7>
10718 063200                            T28PACKET:
10719 063200  100004                            .WORD   100004          ;COMMAND PACKET FOR TEST
10720 063202  063210                            .WORD   T28DATA         ;WRITE CHARACTERISTICS COMMAND, WITH IE, ACK
10721 063204  000000                            .WORD   0               ;ADDRESS OF CHARACTERISTICS BLOCK
10722 063206  000012                            .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
10723 063210                            T28DATA:                        ;CHARACTERISTICS DATA BLOCK
10724 063210  063220                            .WORD   T28BFR          ;ADDRESS OF MESSAGE BUFFER
10725 063212  000000                            .WORD   0
10726 063214  000024                            .WORD   20.             ;LENGTH OF MESSAGE BUFFER
10727 063216  000000                            .WORD   0
10728 063220                            T28BFR: .BLKW   25.             ;MESSAGE BUFFER
10729                                   ;
10730                                   ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
10731                                   ;
10733 063302                                    .BLKB   10-<.-TUV2A&7>
10735 063310                            T28PK2:
10736 063310  100006                            .WORD   100006          ;WRITE SUB SYS MEM COMMAND, IE AND ACK
10737 063312  063340                            .WORD   T28BF2          ;ADDRESS OF SELECT BLOCK DATA
10738 063314  000000                            .WORD   0
10739 063316  000006                            .WORD   6.              ;SIZE OF DATA PACKET
10741 063320                                    .BLKB   10-<.-TUV2A&7>
10743 063330                            T28PK3:
10744 063330  100005                            .WORD   100005          ;REREAD COMMAND,  AND ACK
10745 063332                            T28RB:
10746 063332  003072                    T28WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
10747 063334  000000                            .WORD   0
10748 063336  000000                    T28SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
10749                                           .EVEN
10750                                   ;
10751 063340                            T28BF2:
10752 063340     010                    T28BS0: .BYTE   10              ;BSEL0 AREA
10753 063341     200                    T28BS1: .BYTE   200             ;BSEL1 AREA
10754 063342  000000                    T28S2:  .WORD   0               ;SEL 2 AREA
10755 063344  000000                    T28S3:  .WORD   0               ;DATA AREA
10756                                   ;
10757                                           .EVEN
10758                                   ;TAPE MOTION PACKET COMMAND VALUES
10759 063346                            T28IMV:
10760 063346  101411                            .WORD   101411          ;ILLEGAL MODE BITS TEST DATA
10761 063350  102011                            .WORD   102011
10762 063352  103411                            .WORD   103411
10763 063354  177777                            .WORD   177777
10764 063356  100011                    T28RN:  .WORD   100011          ;WRITE TAPE MARK COMMAND
10765 063360  100411                    T28WDR: .WORD   100411          ;ERASE COMMAND
10766 063362  101011                    T28CON: .WORD   101011          ;WRITE TAPE MARK RETRY
10767 063364  177777                            .WORD   177777          ;END OF DATA
10768                                   ;
10769 063366  000000                    T28CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
10770 063370  000000                    T28CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
10771 063372  000000                    T28DLY: .WORD   0               ;DELAY COUNTER
10772                                           .EVEN
```

```
10774
10775                                   ;+
10776                                   ;LOCAL TEXT MESSAGES FOR TEST
10777                                   ;-
10778
10779
10780 063374      124     141     160   T28RIB: .ASCIZ  'Tape Position Not Correct, RIB Should Be Set'
10781 063451      122     145     163   T28PBP: .ASCIZ  'Residual Byte Counter Register (RBPCR) Not Correct'
10782 063534      124     123     123   T28RDF: .ASCIZ  'TSSR Incorrect After READ REVERSE Into TAPE MARK'
10783 063615      124     123     123   T28RDG: .ASCIZ  'TSSR Incorrect After SPACE Command Into TAPE MARK'
10784 063677      124     123     123   T28WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
10785 063754      111     154     154   T28LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILL Bit In XSTO'
10786 064035      127     122     111   T28SSR: .ASCIZ  'WRITE MISCELLANEOUS Command Not Accepted'
10787 064106      124     123     123   T28WDE: .ASCIZ  'TSSR Not Correct After READ DATA Command, Into TAPE MARK'
10788 064177      124     141     160   T28BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
10789 064244      124     123     123   T28TM:  .ASCIZ  'TSSR Not Correct After FORMAT Command Reject'
10790 064321      122     145     167   T28RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
10791 064370      104     162     151   T28OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
10792 064443      124     123     123   T28WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK Command'
10793 064522      103     126     103   T28VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
10794 064575      124     115     113   T28TMK: .ASCIZ  'TMK Not Set After WRITE TAPE MARK Command'
10795 064647      124     115     113   T28RRM: .ASCIZ  'TMK Not Set After READ REVERSE Into TAPE MARK'
10796 064725      124     115     113   T28RRN: .ASCIZ  'TMK Not Set After SPACE REVERSE Into TAPE MARK'
10797 065004      124     115     113   T28RRP: .ASCIZ  'TMK Not Set After READ FORWARD Into TAPE MARK'
10798 065062      104     141     164   T28DTR: .ASCIZ  'Data Transferred On READ REVERSE Into A TAPE MARK'
10799 065144      104     141     164   T28DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
10800 065241      127     162     151   TST28ID:        .ASCIZ  'Write/Read Tape Mark'
10801                                           .EVEN
10802                                   ;+
10803                                   ;
10804                                   ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
10805                                   ;WRITE SUBSYSTEM MEMORY COMMAND
10806                                   ;
10807                                   ;-
10808
10809 065266                           T28REST:
10810 065266                                   SAVREG                          ;SAVE THE REGISTERS
10811 065272  012701  063200                   MOV     #T28PACKET,R1           ;START OF THE PACKET
10812 065276  012721  100004                   MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
10813 065302  012721  063210                   MOV     #T28DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
10814 065306  005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
10815 065310  012721  000012                   MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
10816 065314  012721  063220                   MOV     #T28BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
10817 065320  005021                           CLR     (R1)+
10818 065322  012721  000024                   MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
10819 065326  005021                           CLR     (R1)+
10820 065330  012711  000000                   MOV     #0,(R1)                 ;SELECT DRIVE ZERO
10821 065334  012702  000030                   MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
10822 065340  012762  177777  063220  64$:     MOV     #177777,T28BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
10823 065346  005742                           TST     -(R2)                   ;NEXT LOCATION
10824 065350  020227  000000                   CMP     R2,#0                   ;CHECK FOR END
10825 065354  001371                           BNE     64$                     ;KEEP GOING UNTIL DONE
10826 065356  000207                           RTS     PC                      ;RETURN
10827
10828
10829 065360                           T28RT2:
10830 065360                                   SAVREG                          ;SAVE THE REGISTERS
```

```
10831 065364  012701  063310                MOV     #T28PK2,R1          ;START OF THE PACKET
10832 065370  012721  100006                MOV     #100006,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK,
10833 065374  012721  063340                MOV     #T28BF2,(R1)+       ;ADDRESS OF DATA BLOCK
10834 065400  005021                        CLR     (R1)+               ;EXTENDED ADDRESS
10835 065402  012721  000006                MOV     #6.,(R1)+           ;SIZE OF DATA BLOCK IN BYTES
10836 065406  005021                        CLR     (R1)+
10837 065410  012701  063340                MOV     #T28BF2,R1          ;POINT TO DATA SEL AREA
10838 065414  005021                        CLR     (R1)+
10839 065416  005011                        CLR     (R1)
10840 065420  000207                        RTS     PC                  ;RETURN
10841 065422                        T28RT3:
10842 065422                                SAVREG
10843 065426  012701  063330                MOV     #T28PK3,R1          ;GET PACKET ADDRESS
10844 065432  005021                        CLR     (R1)+               ;CLEAR COMMAND AREA
10845 065434  005021                        CLR     (R1)+               ;CLEAR ADDRESS AREA
10846 065436  005021                        CLR     (R1)+               ;CLEAR EXTENDED ADDRESS
10847 065440  005011                        CLR     (R1)                ;SIZE OF DATA TRANSFER
10848 065442  000207                        RTS     PC                          ;RETURN
10849 065444                                ENDTST
      065444                                                      L10074:
      065444  104401                                                    TRAP    CSETST
```

```
11923
11928
11934
11935
11936
11937                                           .SBTTL  HARDWARE PARAMETER CODING SECTION
11938
11939                                   ;++
11940                                   ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
11941                                   ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
11942                                   ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTION'S BUT ARE
11943                                   ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
11944                                   ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
11945                                   ; WITH THE OPERATOR.
11946                                   ;--
11947 072244                                      BGNHRD
       072244  000015                            .WORD L10076-L$HARD/2
       072246                           L$HARD::
11948
11949 072246                                      GPRMA   HPM1,0,0,160000,177776,YES      ;GET TSBA/TSDB REGISTER ADDRESS.
       072246  000031                            .WORD   T$CODE
       072250  072300                            .WORD   HPM1
       072252  160000                            .WORD   T$LOLIM
       072254  177776                            .WORD   T$HILIM
11950 072256                                      GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
       072256  001031                            .WORD   T$CODE
       072260  072327                            .WORD   HPM2
       072262  000000                            .WORD   T$LOLIM
       072264  000776                            .WORD   T$HILIM
11951 072266                                      GPRMD   HPM3,4,0,340,0,7,YES            ;GET INTERRUPT PRIORITY.
       072266  002032                            .WORD   T$CODE
       072270  072353                            .WORD   HPM3
       072272  000340                            .WORD   340
       072274  000000                            .WORD   T$LOLIM
       072276  000007                            .WORD   T$HILIM
11952 072300                                      ENDHRD
                                                  .EVEN
       072300                           L10076:
11953 072300      104     105     126  HPM1:     .ASCIZ  'DEVICE ADDRESS (TSSR) '
11954 072327      111     116     124  HPM2:     .ASCIZ  'INTERRUPT VECTOR    '
11955 072353      111     116     124  HPM3:     .ASCIZ  'INTERRUPT PRIORITY     '
11956                                             .EVEN
11957
```

```
                                        .SBTTL  SOFTWARE PARAMETER CODING SECTION

                                ;++
                                ; THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                ; WITH THE OPERATOR.
                                ;--
072404                                  BGNSFT
072404  000006                          .WORD L10077-L$SOFT/2
072406                          L$SOFT::
072406                                  GPRML   SPM1,0,-1,YES                   ;GET RAM DUMP FLAG
072406  000130                          .WORD   T$CODE
072410  072422                          .WORD   SPM1
072412  177777                          .WORD   -1
072414                                  GPRML   SPM4,2,-1,YES                   ; GET ITERATION CONTROL.
072414  001130                          .WORD   T$CODE
072416  072461                          .WORD   SPM4
072420  177777                          .WORD   -1
                                ;       GPRMD   SPM6,4,D,7777,0,7777,YES        ; GET LOCAL ERROR LIMIT
                                ;       GPRMD   SPM7,6,D,7777,0,7777,YES        ; GET GLOBAL ERROR LIMIT
072422                                  ENDSFT
                                        .EVEN
072422                          L10077:

072422  105  116  101  SPM1:    .ASCIZ  'ENABLE M7454 RAM DUMP ON ERROR'
072461  111  116  110  SPM4:    .ASCIZ  'INHIBIT ITERATIONS     '
072511  120  105  122  SPM6:    .ASCIZ  'PER TEST ERROR LIMIT   '
072541  120  105  122  SPM7:    .ASCIZ  'PER UNIT ERROR LIMIT   '
                                        .EVEN
                                        .SBTTL  PATCH AREA
                                ;+
                                ;DISPATCH TABLE
                                ;
                                ; *** MOVE TO FRONT OF PROGRAM FOR RELEASE ***
                                ;-
072572                                  DISPATCH        TESTNO
072572  000004                          .WORD   4
072574                          L$DISPATCH::
072574  023644                          .WORD   T1
072576  031656                          .WORD   T2
072600  051026                          .WORD   T3
072602  061024                          .WORD   T4
                                ;
                                ; FINALLY A GENEROUS PATCH AREA.
                                ;
                                ; AND AN ADJUSTMENT TO ACCOUNT FOR THE "LASTAD BIT7" HACK
                                ; DESCRIBED IN "SUPPRG.MEM" (FOR REV C).
                                ;
072604                          PATCH::
```

PATCH AREA

```
11997 072604                                MOVER:
11998 072604  012706  001000                      MOV     #1000,SP                ;SET STACK AT LOC 1000
11999 072610  000005                              RESET                           ;GET THINGS IN PLACE
12000 072612  012701  177777                      MOV     #-1,R1                  ;SET UP COUNTER
12001 072616  005301                        5$:   DEC     R1                      ;BUMP COUNTER
12002 072620  001376                              BNE     5$                      ;BR, IF MORE COUNTING TO DO
12003 072622  012703  073020                      MOV     #MHDR+ROMBASE-MOVER,R3  ;POINT TO MESSAGE
12004 072626  004737  072774                      JSR     PC,PRINT                ;"MOVER REV ??"
12005 072632  012701  172340                TEST5A: MOV     #KIPAR0,R1              ;MOVER OF KIPAR REGISTERS
12006 072636  012705  172300                      MOV     #KIPDR0,R5              ;MOVER OF THE KIPDR REGISTERS
12007 072642  005000                              CLR     R0                      ;FIRST PAGE BASE ADDRESS
12008 072644  010021                        20$:  MOV     R0,(R1)+                ;SET BASE FOR NEXT MAP
12009 072646  012725  077406                      MOV     #77406,(R5)+            ;4K READ/WRITE EACH PAGE
12010 072652  062700  000200                      ADD     #200,R0                 ;BASE FOR THE NEXT PAGE
12011 072656  020027  001600                      CMP     R0,#1600                ;DONE ALL PAGES ?
12012 072662  003770                              BLE     20$                     ;SET UP ALL MEMORY MANAGEMENT PAGES
12013 072664  012741  007600                      MOV     #7600,-(R1)             ;SET UP I/O PAGE
12014 072670  012737  002000  172354        16$:  MOV     #2000,@#KIPAR6          ;MOVER MEMORY PAGE 32KWORDS
12015 072676  005005                              CLR     R5                      ;INITIAL LOCATION 0 MOVER
12016 072700  012701  140000                17$:  MOV     #140000,R1              ;MOVER AT  LOC 0, RELATIVE TO KIPAR6
12017 072704  012504                        10$:  MOV     (R5)+,R4                ;GET MEMORY CONTENTS
12018 072706  052737  000001  177572              BIS     #1,@#SR0                ;ENABLE MEMORY MANAGEMENT
12019 072714  010421                              MOV     R4,(R1)+                ;PUT INTO UPPER MEMORY
12020 072716  042737  000001  177572              BIC     #1,@#SR0                ;TURN OFF MEMORY MANGEMENT
12021 072724  020127  157776                      CMP     R1,#157776              ;END OF MEMORY PAGE YET ?
12022 072730  101765                            BLOS    10$                     ;LOOP TILL WHOLE PAGE WRITTEN
12023 072732  062737  000200  172354              ADD     #200,@#KIPAR6           ;MAP INTO NEXT PAGE
12024 072740  023727  172354  003600              CMP     @#KIPAR6,#3600          ;UP TO 64K YET
12025 072746  002754                              BLT     17$                     ;LOOP UNTIL ALL MEMORY WRITTEN
12026 072750  042737  000001  177572              BIC     #1,@#SR0                ;TURN OFF MEMORY MANGEMENT
12027 072756  012703  073107                      MOV     #GOOD+ROMBASE-MOVER,R3  ;POINT TO MESSAGE
12028 072762  004737  072774                      JSR     PC,PRINT                ;"CODE HAS BEEN MOVED"
12029 072766  000000                              HALT                            ;WAIT FOR DISK SWAP
12030 072770  000137  073156                      JMP     RLBOOT                  ;GO BOOT THE XXDP PACK
12031                                       ;
12032                                       ;     PRINT ROUTINE
12033                                       ;
12034 072774                                PRINT:
12035 072774  004737  073004                1$:   JSR     PC,TTYPRT               ;GO TO PRINT ROUTINE
12036 073000  001375                              BNE     1$                      ;LOOP UNTIL 000000 IS FOUND
12037 073002  000207                              RTS     PC                      ;RETURN TO CALLER
12038                                       ;
12039                                       ;     CHARACTER PRINT ROUTINE
12040                                       ;
12041 073004  105737  177564                TTYPRT: TSTB    @#TTOCSR                ;CHECK TTY FOR DONE
12042 073010  100375                              BPL     TTYPRT                  ;LOOP UNTIL DONE SETS
12043 073012  112337  177566                      MOVB    (R3)+,@#TTOBFR          ;SEND OUT CORRECT CHARACTER
12044 073016  000207                              RTS     PC                      ;RETURN TO CALLER
12045                                       ;
12046                                       ;     MESSAGE AREA
12047                                       ;
12048 073020     015     012     115        MHDR:   .ASCII  <15><12>/MOVER REV 0.0/
12049 073037     015     012     103                .ASCIZ  <15><12>/CODE FROM 0-32K MOVES TO 32-64K WORDS/
12050 073107     015     012     103        GOOD:   .ASCIZ  <15><12>/CODE HAS BEEN MOVED/<15><12>
12051 073137     015     012     102        BOOT:   .ASCIZ  <15><12>/BOOTING XXDP/
12052                                              .EVEN
```

```
12054 073156                              RLBOOT:
12055 073156  012701  174400                      MOV     #CSR,R1                 ;DL'S CSR REGISTER ADDRESS
12056 073162  012700  174404              1$:     MOV     #DAR,R0                 ;ADDRESS OF RL'S REGISTERS
12057 073166  012720  000013                      MOV     #DLSR,(R0)+             ;SET RESET AND GET STATUS
12058 073172  004537  073320                      JSR     R5,3$                   ;MOVER PULSE
12059 073176  000004                              .WORD   DLGETS                  ;GET STATUS COMMAND
12060 073200  032711  000001                      BIT     #READY,@R1              ;CHECK FOR DRIVE READY
12061 073204  001010                              BNE     2$                      ;BR IF READY
12062 073206  011004                              MOV     (R0),R4                 ;GET STATUS INFO
12063 073210  042704  177730                      BIC     #DLERR,R4               ;ERROR MASK
12064 073214  001451                              BEQ     7$                      ;BR IF NO PACK
12065 073216  022704  000006                      CMP     #DLUN,R4                ;UNLOAD HEADS CHECK
12066 073222  101446                              BLOS    7$                      ;BR IF YES
12067 073224  000756                              BR      1$                      ;JUST WAIT AROUND FOR READY
12068 073226  004537  073320              2$:     JSR     R5,3$                   ;RETURN TO SAVE CODE
12069 073232  000010                              .WORD   DLRDHD                  ;GET CURRENT HEAD POSITION
12070 073234  011004                              MOV     @R0,R4                  ;GET ADDRESS
12071 073236  042704  000177                      BIC     #DLCYL,R4               ;JUST CYLINDER ADDRESS
12072 073242  005204                              INC     R4                      ;SET UP FOR SEEK
12073 073244  010440                              MOV     R4,-(R0)                ;CYLINDER OFFSET IN
12074 073246  004537  073320                      JSR     R5,3$                   ;DO THE SEEK
12075 073252  000006                              .WORD   SEEK                    ;SEEK COMMAND
12076 073254  005037  174402                      CLR     @#BAR                   ;ADDRESS 0
12077 073260  005020                              CLR     (R0)+                   ;CYLINDER 0 SECTOR 0
12078 073262  012710  177400                      MOV     #-256.,@R0              ;256 WORD TRANSFER 2'S COMP
12079 073266  004537  073320                      JSR     R5,3$                   ;DO THE READ
12080 073272  000014                              .WORD   READ                    ;READ COMMAND
12081 073274  005000                              CLR     R0                      ;POINT TO DRIVE 0
12082 073276  022737  000240  000000              CMP     #240,@#0                ;LOC 0 = TO NOP
12083 073304  001016                              BNE     8$                      ;NOT TRUE BOOT RECORD
12084 073306  012703  073137                      MOV     #BOOT+ROMBASE-MOVER,R3  ;POINTER TO PRINT ROUTINE
12085 073312  004737  072774                      JSR     PC,PRINT                ;"ABOUT TO BOOT XXDP"
12086 073316  005007                              CLR     PC                      ;LOOKS GOOD JUMP 0
12087                                     ;
12088                                     ;
12089                                     ;       END TEST NUMBER SIXTEEN
12090                                     ;
12091                                     ;
```

```
12093 073320  012511                3$:     MOV     (R5)+,@R1                       ;ACTUAL MOVER WITH COMMAND
12094 073322  032711  100200          4$:     BIT     #DLDNER,@R1                     ;CHECK FOR DONE OR ERROR BITS
12095 073326  001775                          BEQ     4$                              ;WAIT FOR SAME
12096 073330  100401                          BMI     5$                              ;BR ON ERROR
12097 073332  000205                          RTS     R5                              ;OK KEEP GOING
12098 073334  077266                5$:     SOB     R2,1$                           ;RETRY MINUS ONE
12099 073336  000000                          HALT                            ;HALT ON ERROR
12100 073340  000000                7$:     HALT                            ;HALT ON ERROR
12101 073342  000000                8$:     HALT                            ;HALT ON ERROR
12102
12103                               ;       .IF     NZ,.&377
12104                               ;       .=.!377+1
12105                               ;       .ENDC
12106 073344                                LASTAD          ;SET LAST USED ADDRESS.
                                            .EVEN
      073344  073362                       .WORD T$FREE
      073346  000005                       .WORD T$SIZE
      073350                        L$LAST::
12107                                       .SBTTL  HARD CODED P-TABLE
12108                               ;++
12109                               ;       DIAGNOSTIC IS PRE-PARAMETERIZED PER THIS TABLE
12110                               ;--
12111 073350                                BGNSETUP        1
12112 073350                                BGNPTAB
      073350  000000                       .WORD   0
      073352  000003                       .WORD   L10102-./2-1
      073354                        L10100:
12113 073354  172522                       .WORD           172522
12114 073356  000224                       .WORD           224
12115 073360  000240                       .WORD           PRI05
12116 073362                                ENDPTAB
      073362                        L10102:
12117 073362                                ENDSETUP
12118
12119         000001                        .END
```

CZTUYA0 TU80 FRONT END PRT C MACRO M1200 29-MAR-83 13:43 PAGE 138-1

SYMBOL TABLE

```
ADDSSR  011772 G      CTABM   003116 G      DATASC  021134        FATERR= 000060        G$YES = 000010
ADR   = 000020 G      C$AU  = 000052        DEBUGM  011464        FATFLG  002170 G      HIADDR= 001400
AMBTSS  006336        C$AUTO= 000061        DEVCNT  002166 G      FERCM   011554        HIMEM = 007776
ASSEMB= 000010        C$BRK = 000022        DEVDRO  023574        FIFEXP  012022 G      HOE   = 100000 G
A1716 = 000003        C$BSEG= 000004        DEVNRD  023513        FIF2MS  012074        HPM1    072300
BADDAT  003110 G      C$BSUB= 000002        DEVNXR  023431        FIF2MS  012143        HPM2    072327
BADSSR  016550 G      C$CEFG= 000045        DEVONL  023361        FILLME  020372        HPM3    072353
BAR   = 174402        C$CLCK= 000062        DEVSUM  023324        FNOINT  004113        IBE   = 010000 G
BENBSW  002174 G      C$CLEA= 000012        DFPTBL  002124 G      FORCER  002144 G      IDU   = 000040 G
BIE   = 040000        C$CLOS= 000035        DIAGMC= 000000        FREE    003072 G      IER   = 020000 G
BIT0  = 000001 G      C$CLP1= 000006        DLCYL = 000177        FREEHI  003076        IFAULT  004154
BIT00 = 000001 G      C$CVEC= 000036        DLDNER= 100200        FRESIZ  003074 G      INCERK  017742
BIT01 = 000002 G      C$DCLN= 000044        DLERR = 177730        FUSI    004015        INTCPC  017020
BIT02 = 000004 G      C$DODU= 000051        DLGETS= 000004        F$AU  = 000015        INTFLA  017015
BIT03 = 000010 G      C$DRPT= 000024        DLRDHD= 000010        F$AUTO= 000020        INTMAS  017014
BIT04 = 000020 G      C$DU  = 000053        DLRDNH= 000016        F$BGN = 000040        INTR    017066 G
BIT05 = 000040 G      C$EDIT= 000003        DLSR  = 000013        F$CLEA= 000007        INTREC  002172 G
BIT06 = 000100 G      C$ERDF= 000055        DLUN  = 000006        F$DU  = 000016        INTVEC  017016
BIT07 = 000200 G      C$ERHR= 000056        DSBINT  017054        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  017675        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  017022        F$SOFT= 000005        I$HRD = 000041
BIT4  = 000020 G      C$GPHR= 000042        ENVIRN  021532        F$SRV = 000010        I$INIT= 000041
BIT5  = 000040 G      C$GFLG= 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   005764        F$TEST= 000001        I$PROT= 000040
BIT8  = 000400 G      C$INLP= 000020        EPRT3   006025        GDDAT   003112 G      I$PTAB= 000041
BIT9  = 001000 G      C$MANI= 000050        ERCM    011565        GERRMA  002142 G      I$PWR = 000041
BOE   = 000400 G      C$MEM = 000031        ERRHI   002202 G      GETPAT  021076 G      I$RPT = 000041
BOOT    073137        C$MSG = 000023        ERRK    017654        GETSEL  021160 G      I$SEG = 000041
BRINIT  004355        C$OPEN= 000034        ERRLO   002204 G      GOOD    073107        I$SETU= 000041
BSEL0 = 000000        C$PNTB= 000014        ERRNO = 000656        G$CNTO= 000200        I$SFT = 000041
BSEL1 = 000001        C$PNTF= 000017        ERRVEC= 000004 G      G$DELM= 000372        I$SRV = 000041
CHKAMB  016714        C$PNTS= 000016        ERTABE  003330        G$DISP= 000003        I$SUB = 000041
CHKMAN  021402 G      C$PNTX= 000015        ERTABL  003130        G$EXCP= 000400        I$TST = 000041
CHKTSS  017234        C$QIO = 000377        ESUM    017656        G$HILI= 000002        J$JMP = 000167
CKDROP  020152        C$RDBU= 000007        EVL   = 000004 G      G$LOLI= 000001        KIPAR0= 172340
CKEMAX  020000        C$REFG= 000047        EXBCNT= 000010        G$NO  = 000000        KIPAR1= 172342
CKMSG   011212 G      C$RESE= 000033        EXPBRE  016352 G      G$OFFS= 000400        KIPAR2= 172344
CKMSG2  011332 G      C$REVI= 000003        EXPD    002176 G      G$OFSI= 000376        KIPAR3= 172346
CKRAM   010534 G      C$RFLA= 000021        EXPGOT  004431        G$PRMA= 000001        KIPAR4= 172350
CKRAM2  011110 G      C$RPT = 000025        EXPGT2  004465        G$PRMD= 000002        KIPAR5= 172352
CMPMEM  020556        C$SEFG= 000046        EXPMSG  002266 G      G$PRML= 000000        KIPAR6= 172354
CONFIG  020220        C$SPRI= 000041        EXPREC  016344 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$RADD= 000040        KIPDR1= 172302
CSRADD  002154 G      DAR   = 174404        E$END = 002100        G$RADL= 000120        KIPDR2= 172304
CTAB    003116 G      DATA    002256 G      E$LOAD= 000035        G$RADO= 000020        KIPDR3= 172306
CTABE   003130 G      DATAFL  015063        FATCHK  020100        G$XFER= 000004        KIPDR4= 172310
```

SYMBOL TABLE

```
KIPDR5= 172312          L$REV   002010 G      L10057  041220          NULCR   004426          O.GET   071236
KIPDR6= 172314          L$RPT   023062 G      L10060  042066          NXM   = 004000          O.GO    067256
KIPDR7= 172316          L$SOFT  072406 G      L10061  042724          NXR     003636          O.GO1   067344
KTENAB  003102 G        L$SPC   002056 G      L10062  043644          NXRERR  005176 G        O.GO2   067350
KTFLG   003100 G        L$SPCP  002020 G      L10063  044642          NXRX    003675          O.HIGH  072146
KTINIT  021620          L$SPTP  002024 G      L10064  045212          NXTU    022224          O.LG  = 000010
KTOFF   020244          L$STA   002030 G      L10065  045654          OFL   = 000100          O.LGCH  071541
KTON    020226          L$SW    002134 G      L10066  061022          ONEFIL= 000000          O.LGDR  066136
LERRMA  002140 G        L$TEST  002114 G      L10067  051446          O$APTS= 000000          O.LOW   072144
LISTAL= 000001          L$TIML  002014 G      L10070  052220          O$AU  = 000001          O.MOVE  067650
LOE   = 040000 G        L$UNIT  002012 G      L10071  053034          O$BGNR= 000001          O.MSK   072142
LOOPCN  002164 G        L10000  002132        L10072  053730          O$BGNS= 000001          O.ODT   065446 G
LOOPCO  012760          L10001  002144        L10073  055446          O$DU  = 000001          O.OFST  066766
LOOPFL  003114 G        L10002  005226        L10074  065444          O$ERRT= 000000          O.OLD   066364
LOT   = 000010 G        L10003  011676        L10075  063140          O$GNSW= 000001          O.OP1   066370
L$ACP   002110 G        L10004  011726        L10076  072300          O$POIN= 000001          O.OP2   066434
L$APT   002036 G        L10005  011744        L10077  072422          O$SETU= 000001          O.OP2A  066442
L$AU    022560 G        L10006  011752        L10100  073354          O.ADR1  072156          O.ORAB  065674
L$AUT   002070 G        L10007  011770        L10102  073362          O.ALL   070542          O.ORPC  065652
L$AUTO  022764 G        L10010  012006        MEMADD  013606 G        O.AS    066236          O.ORRB  065704
L$CCP   002106 G        L10011  012020        MENASC  021351          O.ASC   071525          O.P     071521
L$CLEA  023040 G        L10012  012072        MENERR  021276          O.ASCI  067552          O.PCS   065664
L$CO    002032 G        L10013  012242        MENRES  021400          O.BACK  066522          O.PRNT  070010
L$DEPO  002011 G        L10014  012756        MESBFA  002716 G        O.BALL  070426          O.PROC  067366
L$DESC  003342 G        L10015  013604        MESBFN  014633          O.BD    071526          O.PROM  071534
L$DESP  002076 G        L10016  013626        MESHEA  015016          O.BKP = 000016          O.RALL  066712
L$DEVP  002060 G        L10017  016350        MHDR    073020          O.BKPT  066550          O.RCSR= 177560
L$DISP  072574 G        L10020  016356        MMVEC = 000250          O.BRK   070056          O.RDB = 177562
L$DLY   002116 G        L10021  016364        MOVER   072604          O.BW    071506          O.REG   071440
L$DTP   002040 G        L10022  016376        MPR   = 174406          O.BYT   066274          O.REGT  065564
L$DTYP  002034 G        L10023  016420        MSA.FR= 000006          O.BYT1  066266          O.REM   070712
L$DU    022656 G        L10024  016446        MSA.NO= 000000          O.CAD   071510          O.RSB   070646
L$DUT   002072 G        L10025  016606        MSA.NR= 000004          O.CADV  071054          O.RSR   070616
L$DVTY  003334 G        L10026  017116        MSA.VO= 000002          O.CLGT= 000035          O.RSTT  071006
L$EF    002052 G        L10030  022510        MSGEXP  012010 G        O.CLSE  071352          O.S     071517
L$ENVI  002044 G        L10031  022654        MSGLOO  012716 G        O.COMP  067712          O.SCAN  066030
L$ETP   002102 G        L10032  022762        MSGSTA  012202 G        O.CR    071531          O.SEMI  066230
L$EXP1  002046 G        L10033  023036        MSGSUB  013574 G        O.CRET  066356          O.SEQ   071524
L$EXP4  002064 G        L10034  023060        MS.ATT= 000006          O.CRLF  071404          O.SNGL  065754
L$EXP5  002066 G        L10035  023322        MS.EXT= 000200          O.CRLS  071420          O.SPAC  071340
L$HARD  072246 G        L10036  031654        MS.RSD= 000001          O.CSR1  071522          O.STM = 000340
L$HIME  002120 G        L10037  024366        MS.RSF= 000020          O.CSR2  071523          O.SVR   070556
L$HPCP  002016 G        L10040  025026        MS.RST= 000010          O.CT    072200          O.SVTT  070760
L$HPTP  002022 G        L10041  025462        NBA   = 002000          O.C1    067440          O.SWCH  072150
L$HW    002124 G        L10042  026212        NEWPAS  022212          O.DCD   066004          O.T     071520
L$ICP   002104 G        L10043  027140        NODEV   003062 G        O.DCDA  066362          O.TBIT  067316
L$INIT  021762 G        L10044  027450        NOINIT  004233          O.DCDB  066710          O.TBT = 000020
L$LADP  002026 G        L10045  030040        NOINTR  004117          O.DCD1  066024          O.TCLS  065726
L$LAST  073350 G        L10046  051024        NOITS   002136 G        O.DCD2  066020          O.TCSR= 177564
L$LOAD  002100 G        L10047  032606        NOMAN   021436          O.DOT   071512          O.TDB = 177566
L$LUN   002074 G        L10050  033444        NP.IR = 000200          O.DUMP  067472          O.TL    071576
L$MREV  002050 G        L10051  034330        NP.LOO= 000040          O.EFF   067076          O.TRTC  071606
L$NAME  002000 G        L10052  035250        NP.OUT= 000100          O.ERR   065774          O.TVEC= 000014
L$PRIO  002042 G        L10053  036016        NP.WRP= 000020          O.ERR1  067072          O.TYPE  071324
L$PROT  021752 G        L10054  036646        NSI     004050          O.FCHR  072152          O.UIN   072222
L$PRT   002112 G        L10055  037510        NSINIT  004305          O.FCNT  072154          O.UPC   072136
L$REPP  002062 G        L10056  040352        NUL     004425          O.FTYP  071170          O.UPS   072140
```

SYMBOL TABLE

```
O.URO   072120          PRMSG1  015647          READY = 000001          S0.IRW= 000004          TSTSET  017406 G
O.USP   072134          PRMSG2  015705          RECMSG  002432 G        S0.ISP= 000200          TST25I  031452
O.WB1   066302          PROASC  014713          RECV    002200 G        S1.ICE= 002000          TST26I  050627
O.WDFG  071516          PR1ASC  014760          REGSAV  021036          S1.IEO= 010000          TST27I  060623
O.WRD   066252          PS?32W  003104 G        REWIND  010434 G        S1.IFM= 001000          TST28I  065241
O.WRD1  066316          PUNIT   022512          RLBOOT  073156          S1.IHE= 000400          TTIBFR= 177562 G
O.WSCH  067102          PW.D11= 000021          RMCHBE= 000167          S1.IID= 004000          TTICSR= 177560 G
O.XXX   071514          PW.D13= 000022          RMCHEN= 000200          S1.I1R= 020000          TTIVEC= 000060 G
PASRPT  022256          PW.D22= 000020          RMMSGB= 000104          S1.I2R= 040000          TTOBFR= 177566
PATCH   072604 G        PW.NOP= 000000          RMMSGE= 000117          S1.PAR= 100000          TTOCSR= 177564
PATDAT  021132          PW.NO1= 000023          RMPKTB= 000020          S2.ATI= 000010          TTYPRT  073004
PC.ERA= 002400          PW.RDE= 000024          RMPKTE= 000027          S2.BTI= 000004          TUV2A   002000 G
PC.IER= 002000          PW.RDR= 000001          RMR   = 010000          S2.DIM= 000200          T$ARGC= 000003
PC.NOO= 001000          PW.RDS= 000005          ROMBAS= 072604          S2.ILW= 000100          T$CODE= 001130
PC.REL= 000000          PW.RFI= 000003          RWPACK  010530          S2.INR= 000020          T$ERRN= 000656
PC.REW= 000400          PW.WCT= 000006          SC    = 100000          S2.OUT= 000040          T$EXCP= 000000
PKBCNT= 000006          PW.WFI= 000004          SCE   = 020000          S2.UND= 000003          T$FLAG= 000040
PKHI  = 000004          PW.WFM= 000007          SCME    004711          TBLEND= 003030 G        T$FREE= 073362
PKLOW = 000002          PW.WMI= 000010          SDELAY  010330          TCOASC  006177          T$GMAN= 000000
PKTADD  007276          PW.WNP= 000011          SEEK  = 000006          TCOCOD  006400          T$HIGI= 000007
PKTFRM  007240          PW.WTR= 000002          SELASC  021344          TEMP1   003064 G        T$LAST= 000001
PKTGET  011730 G        P.ACK = 100000          SELDAT= 000004          TEMP2   003066 G        T$LOLI= 000000
PKTMES  011754 G        P.CMD = 000037          SEL2  = 000002          TERCLS= 000016          T$LSYM= 010000
PKTNEW  007333          P.CONT= 000012          SETMAP  020266          TESTNO= 000004          T$LTNO= 000004
PKTRAM  004643 G        P.CVC = 040000          SETU    022310          TEST5A  072632          T$NEST= 000000
PKTSSR  011700 G        P.FMT = 000140          SFFMSG  011746 G        TEXASC  006136          T$NS0 = 000000
PNT   = 001000 G        P.FORM= 000011          SFHERR  003603          TFCASC  006240          T$NS1 = 000005
PRAMPK  013630          P.GETS= 000017          SFIERR  003550          TIMEXP  016422 G        T$NS2 = 000002
PRBEXP  016340          P.IE  = 000200          SFIMSG  011666 G        TIMSGO  016450          T$PCNT= 000000
PRBMSG  016206          P.INIT= 000013          SFPTBL  002134 G        TINERR  011653          T$PTAB= 0101C1
PRBREC  016342          P.MODE= 007400          SIFLAG  003106 G        TKB   = 177562          T$PTHV= 000001
PRBTOT  016273          P.OPP = 020000          SIMSG   011620          TKS   = 177560          T$PTNU= 000001
PRBYTE  015772 G        P.POSI= 000010          SKIPT   003332          TMPBFR  002576 G        T$SAVL= 177777
PRI   = 002000 G        P.READ= 000001          SOFINI  016644 G        TNAM    017602          T$SEGL= 177777
PRIADD  007712          P.SWB = 010000          SPACE   010140 G        TPB   = 177566          T$SIZE= 000005
PRIAO   007762          P.WRIT= 000005          SPM1    072422          TPS   = 177564          T$SUBN= 000001
PRIBXO  007344 G        P.WRTC= 000004          SPM4    072461          TRANST  002134 G        T$TAGL= 177777
PRIEQU  007612          P.WRTS= 000006          SPM6    072511          TSBA  = 177776 G        T$TAGN= 010103
PRINT   072774          QVP     002152 G        SPM7    072541          TSBAH = 177777 G        T$TEMP= 000005
PRIPKT  007072 G        RAMASC  013776          SR0   = 177572          TSBAL = 177776 G        T$TEST= 000004
PRIRAM  007620          RAMDAT  002206 G        SR1   = 177574          TSDB  = 177776 G        T$TSTM= 177777
PRITAD  010026          RAMER   010636 G        SR2   = 177576          TSDBH = 177777 G        T$TSTS= 000001
PRITSS  005264          RAMERR  016360 G        SR3   = 172516          TSDBL = 177776 G        T$$AU = 010031
PRITO   010076          RAMEXP  016400 G        SSR   = 000200          TSFCOD  006740          T$$AUT= 010033
PRIXOR  007474 G        RAMFHR  014542          STATCO  012244          TSREJ = 000006          T$$CLE= 010034
PRIO0 = 000000 G        RAMFOR  007650          SVCGBL= 000000          TSSDEF  006307          T$$DAT= 010102
PRIO1 = 000040 G        RAMHLD  011020          SVCINS= 000000          TSSR  = 000000 G        T$$DU = 010032
PRIO2 = 000100 G        RAMIOP  011024          SVCSUB= 000001          TSSRBI  003400 G        T$$HAR= 010076
PRIO3 = 000140 G        RAMPD   011075          SVCTAG= 000000          TSSRFO  006116          T$$HW = 010000
PRIO4 = 000200 G        RAMR5H  011022          SVCTST= 000001          TSSRH = 000001 G        T$$INI= 010030
PRIO5 = 000240 G        RAMSIZ  002246 G        S$LSYM= 010000          TSSX    003716          T$$MSG= 010025
PRIO6 = 000300 G        RAMTAD  016366 G        S0.IDB= 000010          TSTBLK  002720 G        T$$PC = 000001
PRIO7 = 000340 G        RBPCRA  015130          S0.IFB= 000002          TSTCNT  002162 G        T$$PRO= 010027
PRMESS  014062          RCVHIA  002250 G        S0.IFP= 000001          TSTEND  017616          T$$PTA= 010101
PRMNO   002264 G        RCVLOA  002252 G        S0.ILD= 000020          TSTFLA  002260 G        T$$RDT= 010035
PRMSGE  015422 G        RDERR   005104          S0.ION= 000040          TSTLOO  017354 G        T$$SOF= 010077
PRMSGO  015602          READ  = 000014          S0.IRD= 000100          TSTPTR  002262 G        T$$SRV= 010026
```

SYMBOL TABLE

```
T$$SUB= 010075          T25TM   030514          T26WSS  050141          T28BOT  064177          WC.IGO= 000001
T$$SW = 010001          T25WB   030232          T27AM3  057167          T28BS0  063340          WC.IRF= 000010
T$$TES= 010074          T25WDC  031401          T27BA   057527          T28BS1  063341          WC.IRW= 000004
T1      023644 G        T25WDE  030367          T27BFR  055530          T28CNT  063366          WC.IOT= 000100
T1.1    023704          T25WDR  030250          T27BF2  055650          T28CNU  063370          WC.I1T= 000040
T1.2    024404          T25WNG  030657          T27BOT  056541          T28CON  063362          WC.I5R= 000020
T1.3    025044          T25WNH  031032          T27BS0  055650          T28DAT  063210          WF.IED= 000010
T1.4    025500          T26AM3  047526          T27BS1  055651          T28DLY  063372          WF.IER= 000004
T1.5    026230          T26BA   050066          T27CNT  055666          T28DTA  065144          WF.IHI= 000200
T1.6    027156          T26BFR  045740          T27CNU  055670          T28DTR  065062          WF.IRE= 000040
T1.7    027466          T26BF2  046060          T27CON  055662          T28IMV  063346          WF.IWF= 000020
T2      031656 G        T26BOT  047115          T27DAT  055520          T28LOO  061070          WF.IWR= 000100
T2.1    031722          T26BS0  046060          T27DLY  055672          T28LOQ  063754          WF.I3R= 000002
T2.10   041236          T26BS1  046061          T27DTA  060526          T28OFL  064370          WF.I4R= 000001
T2.11   042104          T26CNT  046076          T27EOT  056711          T28PAC  063200          WRTCHR  010332 G
T2.12   042742          T26CNU  046100          T27LON  057671          T28PBP  063451          WRTERR  005011
T2.13   043662          T26DAT  045730          T27LOO  051076          T28PK2  063310          WRTMSG  004754
T2.14   044660          T26DLY  046104          T27LOP  057753          T28PK3  063330          XFERAS  016610
T2.15   045230          T26DTA  047162          T27LOQ  056335          T28RB   063332          XNXM    017274
T2.2    032624          T26EOT  047250          T27LOR  056210          T28RDF  063534          XORBFO  007426
T2.3    033462          T26LON  050230          T27NEF  060211          T28RDG  063615          XORFOR  007544
T2.4    034346          T26LOO  031722          T27OFL  057236          T28RES  065266          XST0  = 000006 G
T2.5    035266          T26LOP  050312          T27PAC  055510          T28RIB  063374          XST1  = 000010 G
T2.6    036034          T26LOQ  046726          T27PBP  060035          T28RN   063356          XST2  = 000012 G
T2.7    036664          T26LOR  046601          T27PK2  055620          T28RRM  064647          XST3  = 000014 G
T2.8    037526          T26NEF  046174          T27PK3  055640          T28RRN  064725          XST4  = 000016 G
T2.9    040370          T26NEQ  050550          T27RB   055642          T28RRP  065004          XSOBOT= 000002
T210FL  030264          T26OFL  047575          T27RDF  055762          T28RT2  065360          XSOCON  015175
T25BFR  030120          T26PAC  045720          T27RES  060644          T28RT3  065422          XSOEOT= 000001
T25BF2  030240          T26PBP  050374          T27RN   055656          T28RWN  064321          XSOIE = 000040
T25BNC  030742          T26PK2  046030          T27RNC  057114          T28SSR  064035          XSOILA= 000400
T25BOT  030447          T26PK3  046050          T27RRF  056031          T28SZ   063336          XSOILC= 001000
T25BS0  030240          T26RB   046052          T27RT2  060736          T28S2   063342          XSOLET= 020000
T25BS1  030241          T26RDF  046256          T27RT3  061000          T28S3   063344          XSOMOT= 000200
T25CNT  030260          T26RES  050640          T27RWN  057045          T28TM   064244          XSONEF= 002000
T25CN2  030256          T26RN   046066          T27SC   056126          T28TMK  064575          XSOONL= 000100
T25CON  030252          T26RNC  047453          T27SCF  060307          T28VCK  064522          XSOPED= 000010
T25DAT  030110          T26RRF  046325          T27SSR  056416          T28WB   063332          XSORLL= 010000
T25DLY  030262          T26RRG  046422          T27SZ   055646          T28WDC  064443          XSORLS= 040000
T25LOO  023704          T26RSZ  046102          T27S2   055652          T28WDE  064106          XSOTMK= 100000
T25NEF  031115          T26RT2  050732          T27S3   055654          T28WDF  063677          XSOVCK= 000020
T25NET  030603          T26RT3  050774          T27TIM  056634          T28WDR  063360          XSOWLE= 004000
T25OFL  031326          T26RWN  047404          T27TM   056770          T3      051026 G        XSOWLK= 000004
T25PAC  030100          T26SC   046517          T27TRL  060123          T3.1    051076          XS1CON  015242
T25PK2  030210          T26SSR  047007          T27TSA  060364          T3.2    051464          XS2CON  015307
T25PK3  030230          T26SZ   046056          T27VCK  057454          T3.3    052236          XS3CON  015354
T25RB   030232          T26S2   046062          T27WB   055642          T3.4    053052          XXCOMM  003070 G
T25RES  031470          T26S3   046064          T27WDC  057401          T3.5    053746          X$ALWA= 000000
T25RIB  031175          T26TM   047327          T27WDD  057311          T4      061024 G        X$FALS= 000040
T25RN   030246          T26TRL  050462          T27WDE  056452          T4.1    061070          X$OFFS= 000400
T25RT2  031562          T26VCK  050013          T27WDF  056260          UAM   = 000200 G        X$TRUE= 000020
T25RT3  031624          T26WB   046052          T27WDR  055660          UNITN   002150 G        X1.COR= 020000
T25RWN  031257          T26WDC  047740          T27WNG  055674          UNREC = 000006          X1.DLT= 100000
T25SSR  030306          T26WDD  047650          T27WRF  060446          USI     004021          X1.MBZ= 017375
T25SZ   030236          T26WDE  047043          T27WSS  057602          WAITF   017120 G        X1.RBP= 000400
T25S2   030242          T26WDF  046651          T28BFR  063220          WC.IFA= 000200          X1.SPA= 040000
T25S3   030244          T26WNG  046106          T28BF2  063340          WC.IFE= 000002          X1.UNC= 000002
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CZTUYA0 TU80 FRONT END PRT C    MACRO M1200  29-MAR-83 13:43  PAGE 138-5
SYMBOL TABLE

X2.BUF= 000100          X2.SPA= 035400          X3.MBZ= 000006          X3.RIB= 000001          X4.MBZ= 017400
X2.EXT= 000200          X2.UNI= 000007          X3.MDE= 177400          X3.SPA= 000200          X4.RCE= 040000
X2.OPM= 100000          X2.WCF= 002000          X3.OPI= 000100          X3.TRF= 000020          X4.TSM= 020000
X2.RCE= 040000          X3.DCK= 000010          X3.REV= 000040          X4.HSP= 100000          X4.WRC= 000377
X2.REV= 000077

. ABS.  073362      000
        000000      001
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  36912 WORDS  ( 145 PAGES)
DYNAMIC MEMORY:  20060 WORDS  ( 77 PAGES)
ELAPSED TIME:  00:14:32
CZTUYA.BIC,CZTUYA/-SP=SVC.MLB/ML,CZTUYA.MAC
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